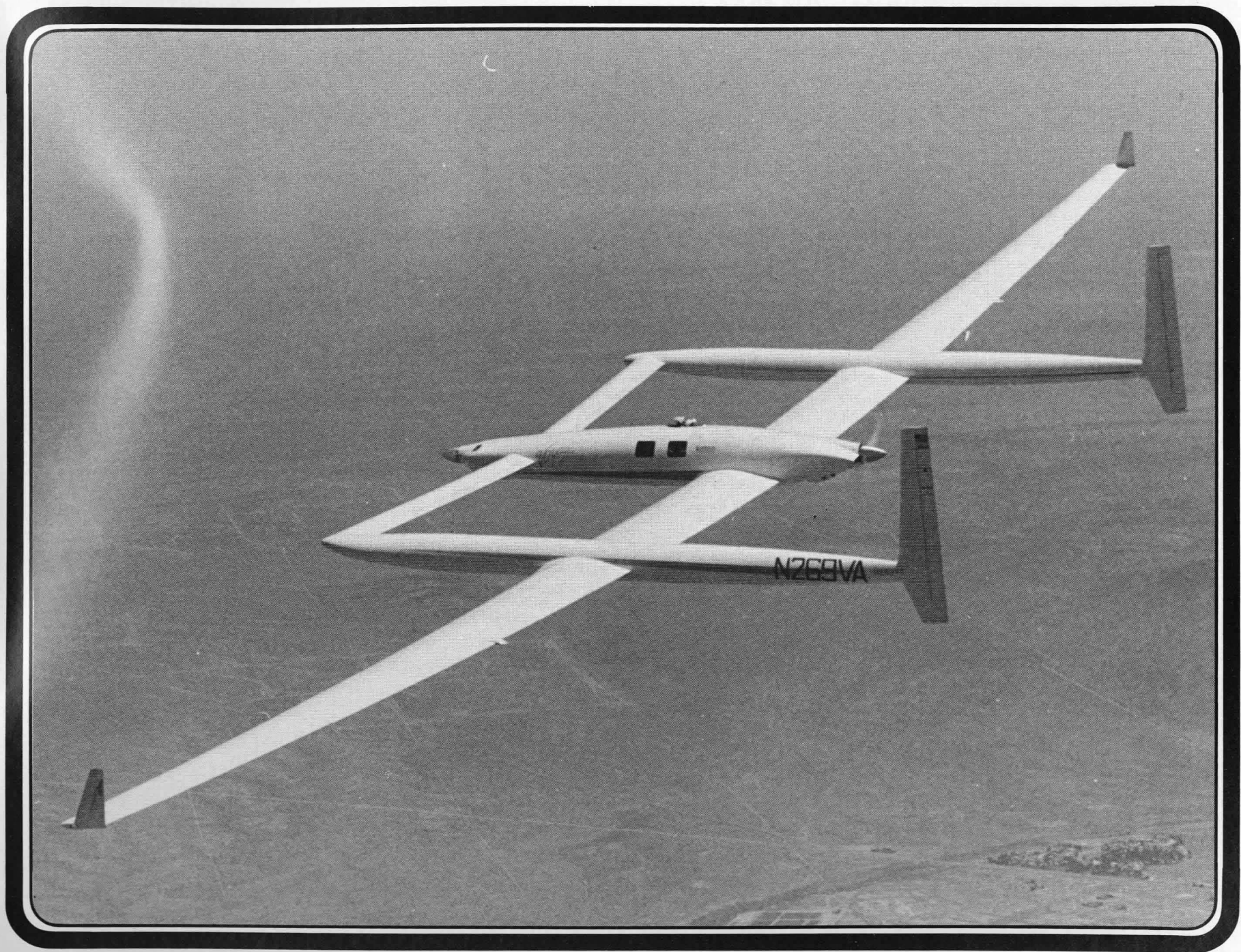


Sportsman Pilot™



Summer



1984



Sportsman Pilot



VOLUME 4

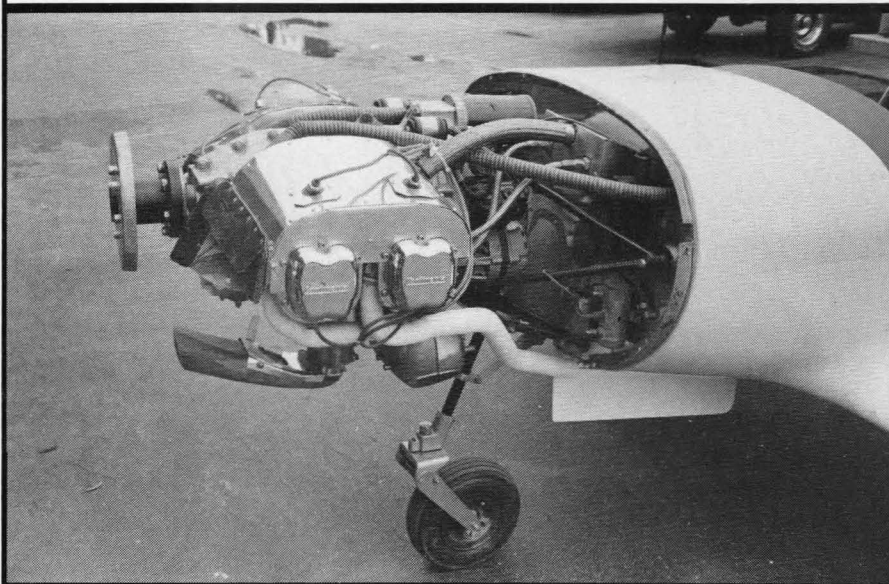
SUMMER 1984

NUMBER 2

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Cover - VOYAGER - Photo by Burt Rutan



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MAG CHECK

I can't explain why - perhaps it's just pure coincidence - but 1984 is turning out to be a tremendous year for completion of new homebuilts and vintage aircraft restorations. At every fly-in we've attended this year, we've smelled new IMRON (or whatnot) as we walked down the display lines - American Eagle, Travel Air 4000s, Stinson SM-8A, SR-5E, Staggerwings . . . Glasairs, Christen Eagles, RV-4s, Long-EZs, Q2s, Dragonflys and more, all basking in the glow of admiration for the first time. It also appears this will be a banner year for introduction of new homebuilt designs, an activity that has been a little slow in recent years. Considering the dire straits the lightplane industry is still in, it's almost an embarrassment of riches that we sport aviation folks are enjoying.

We could be seeing living proof of the old adage "when the goin' gets tough, the tough get goin'." The past few years have been hard, economically, on a lot of people . . . and it takes a few years to turn out a homebuilt or antique. It could be that this current surge of sportplane completions is the end result of a lot of people deciding in 1978 or '80 that, "To heck with bad times, I'm gonna build my dream plane anyway." Or, someone laid off from an aerospace firm deciding to take charge of his own destiny by starting a company and designing his own homebuilt.

Whatever the reason, it's great! I hope there's more - much more - in '84. ☉

KALEIDOSCOPE



Jim Rezich of 1811 Colorado Ave., Rockford, IL 61108 is restoring a 1940 Culver LCA Cadet, SN 192, NC29261. Powered by a Cont. A-75.

FIRST FLIGHTS

June and early July seem to have had more than their share of first flights of new airplanes. The Burt Rutan designed Voyager flew on June 22, Lance Neibauer's Lancer 200 in late June and Ed Swearingen's SX300 on July 11, just to mention a few of the more spectacular ones.

The Voyager, which is certainly one of the most technically and aesthetically arresting aircraft to ever fly, is intended to do just one thing: fly around the world without stopping or refueling. Dick Rutan and Jeana Yeager are to be the pilots who will live inside Voyager's tiny cabin for as much as 13 days, managing its systems and doing their best to avoid bad weather, including delaying headwinds. This summer and fall will be spent shaking down the big bird to determine what refinements are needed to make it ready for its ultimate test. By early July it had already made an 11 hour flight and planning was underway to knock off all the closed course and straight line distance records that stand between Voyager and the world flight. The first was to be Jerry Mullens' 10,007.1 mile closed course mark set in the ex-Jim Bede BD-2. The flight would consist of 3 laps around a Mojave to Oshkosh and return course, each leg of which would take about 18 hours! It would take place during Oshkosh '84 so as to maximize publicity. Sponsorship is needed for the world flight, you see, and Oshkosh sees the greatest concentration of the world's aviation press. By the time you are reading this, you will know if Dick and Jeana were successful.

You'll read all about Lance Neibauer's Lancer 200 elsewhere in this issue, so we'll skip right along to Ed Swearingen's SX300. This 300 hp all-metal 2-placer is likely the fastest homebuilt **transportation** airplane ever conceived . . . there were faster homebuilt racers in the 30s, of course. There is an equal emphasis on quality in the design and

materials that will go into the kits . . . with ultra expensive sports cars as the role model. 45 of them have been sold to date and you can bet there will be more after pilots see it flying at Oshkosh this summer.

WHERE'S LEEON

Where is Leeon Davis? I get that question asked quite frequently . . . and I can tell you he is alive and well in San Antonio and is working on a new project. Had a note from him recently in which he teased, "Who said an affordable airplane can't be better than an unaffordable airplane?"

Leeon is, of course, the designer of a series of all-metal sportplanes, most notably the 2-place DA-2A. His single place DA-5 broke Dick Rutan's closed course C-1a distance record in 1976.

WHO'S ON FIRST?

Quick now, what company is Number One in lightplane sales? Cessna by a mile, you say?

Wrong!

At least in May of this year, you're wrong. That month, Piper sold a not-so-grand total of 56 airplanes to Cessna's 53. The top selling model was Piper's Warrior with 10, second was the Piper Malibu with 9, and there was a tie for third - Piper's Seneca 3 and Cessna's Skylane with 8 each. It all went downhill from there, industrywide. For the year to date, Cessna is in its accustomed position, having sold 326 airplanes to Piper's 275 and Beech's 177.

Of course, all this is something akin to keeping count of the moans of hospital patients. No one is selling much of anything; indeed, few plants are even building single engine airplanes these days. Observers are now seriously wondering not **when** the lightplane market will have an upturn, but **if** it

ever will. It will . . . but there are going to have to be some new products and some new marketing strategies before it does.

THE KITFOX

At the Merced, CA fly-in we spotted what we thought was a taildragger version of the Avid Flyer on the showline and went to investigate. Sure enough, there was Dan Denney with it . . . he and Dean Wilson of Boise, ID were the persons responsible for the Avid Flyer. This airplane, however, had the name "Kitfox" printed on the side and some minor changes were obvious in the shape of the tail and wingtips. A closer look revealed it was powered by a belt driven Rotax 503 (52 horsepower). My confusion was quickly cleared up when Denney informed me he and Dean Wilson had gone their separate ways, each now producing a similar airplane kit. The Kitfox kits sell for \$8200. Denney's new company is Aero-Craft Corp., 6140 Morris Hill Lane, Boise, ID 83704, phone 208/322-1716.

THE LAST VEE TAIL?

A recent issue of the American Bonanza Society Newsletter strongly suggests the production of the vee tail Bonanza is no more. The last one, Serial Number D-10403, was rolled out the Beech factory door two years ago and although the company says you can still have one on "special order", the ABS doubts the production line would be opened for just one airplane. A few V-35Bs apparently still remain unsold in the dealer pipeline, but no new ones are likely to be forthcoming. A combination of the sales success of the straight tail, longer A-36 is the ABS' guess as to why the venerable vee tail is being allowed to fade away into the sunset. Not mentioned by the ABS was all the bad press over vee tail in-flight failures and their alleged cause. The straight tail F-33A is, after all, still in (very) limited production.

Whatever, the ol' vee tail continues to represent one of the greatest quantum leaps in light aircraft design ever made. Rarely has an airplane been so far ahead of its competition as the Bonanza was in 1947 . . . or has a design pointed the path to so far into the future. Everything that has subsequently been built in the Bonanza's class has had as its design goal the equalling or bettering of this 40 year old concept. And that's likely to be the case for still a long time to come.

BIG RED REMEMBERED

If you go back in antique airplane circles as far as the early 60s, the name "Big Red" is lovingly recalled. In those days it meant just one airplane to everyone - the finest, most beautiful Staggerwing in existence. Owned by Dub Yarbrough, then of Atlanta, it was the object of uninhibited adulation everywhere he displayed it. A postwar G Model, Big Red was one of the early expense-is-no-object restorations in the antique airplane hobby world. With a deep hand rubbed red and maroon paint job, a lush custom leather interior and a panel full of what were then the very latest in electronic bells and whistles, chrome plating of all exposed metal, it was a mind blower in its day.

Dub eventually sold Big Red to John Parish of Tullahoma, TN who flew it until a few years ago when it was becoming embarrassingly obvious that the old gal's dress was getting a little frayed at the hem. It was still better than most, but with such a proud heritage, John couldn't stand to allow Big Red to be less than it had once been. Consequently, the airplane is now down for a complete restoration. It will be returned to its former glory - with the same paint job and type of interior. The plan is to go with the latest avionics, however, because that is what was done 'way back when.

Big Red was a part of my early antique airplane experience and I look forward to seeing it back in the air again.

Dub Yarbrough, incidentally, also lives in Tullahoma today and is busy on a Travel Air 4000. It will have the NC number of one of the 4000's Louise Thaden flew to fame in the late 20s. Louise, of course, has a special place in the hearts of all Staggerwing owners and admirers, having won the 1936 Bendix in one.

ROCKY MT. FLY-IN

The 6th Annual Rocky Mountain EAA Regional Fly-In will be held September 8 and 9 at the Greeley-Weld County Airport in Greeley, CO. There will be forums, contests and awards for homebuilts, antiques, classics and other category aircraft. The Grand Champion award is a custom oil painting of the winner. Camping is permitted on the field and transportation will be provided to downtown Greeley and area motels. For further information, contact Bill Marcy, 3041 South Golden Way, Denver, CO 80227, phone 303/986-4398, or Bob Kelly, 213 Eighteenth St., Greeley, CO 80631, phone 303/353-5514.

GEE BEE Y FLIES

If you were around for the Fall 1982 issue of **Sportsman Pilot**, you will recall the article on Ken Flaglor's full scale replica of a Gee Bee Model Y. All the basic structure had been completed then, but it had not been covered, plumbed, etc. Well, he flew it recently and is presently (in late July) flying off the FAA imposed test time in order to fly it to Oshkosh '84. It's a beauty!

SCOTT SWING TO QUICKIE

One of the nicest Q2s yet built has earned its owner a position at Quickie Aircraft at Mojave, CA. Scott Swing, then a graduate student, and his father, Duane Swing of Vandalia, OH, completed N1711Q in 1982 and incorporated several innovations that have since found favor with a lot of Q2 builders, perhaps most notably, a forward sliding canopy. We featured the airplane here in **Sportsman Pilot** in our Fall 1982 issue and noted the full IFR panel, RNAV, HSI, Ryan Stormscope, etc., plus superb workmanship. Subsequently, Scott has flown his Q2 all over the country and has won a lot of trophies with it. We weren't really surprised to see him at Watsonville this year . . . until he told us he now lives in Lancaster, CA and works for Quickie Aircraft.

Congratulations, Scott, and to Gene Sheehan for a fine addition to your staff.

"OTIS" FLIES

Among his many other aviation toys, Ken Brock owns a Stinson 108-3 . . . it was, in fact, his first airplane. For years it was the "mother ship" for LA area homebuilders, serving as the baggage truck and pathfinder to fly-ins for homebuilts unable to handle these functions for themselves.

It also served as Marie Brock's trainer - she soloed in it and did her cross country work behind its 165 Franklin. Ken ultimately

bought a turbo 210 to serve as his travelin' airplane, so when the Stinson needed a rebuild, he decided to make a super sportplane out of it. It has been fitted with a Continental O-470 (235 hp) and a CS prop, had its airframe fully restored and painted in a stunning red and maroon IMRON paint scheme. Ken flew it in mid-July and was so astounded by its new climbing ability that he promptly nicknamed it "Otis" . . . you know, after the elevator!

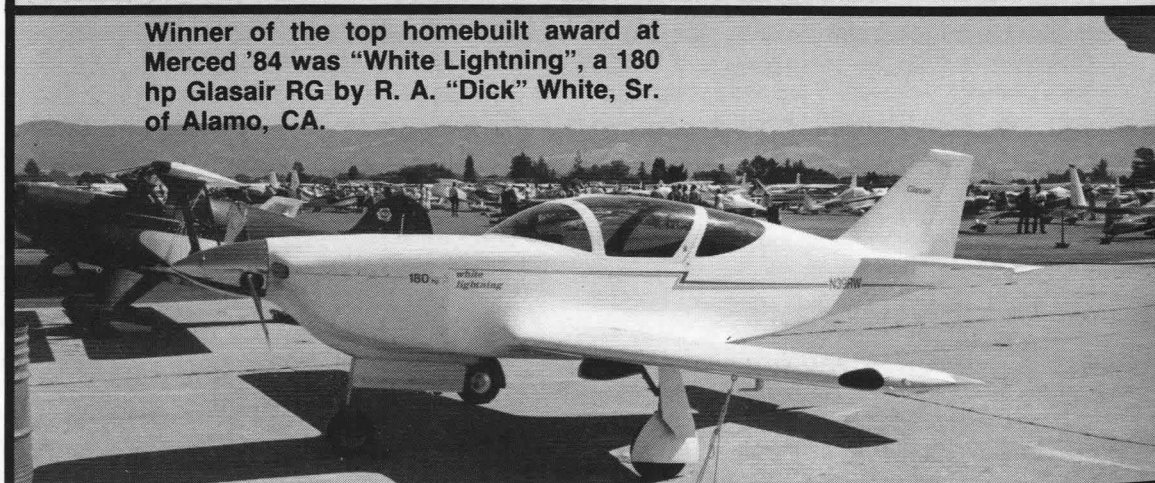


John Monnett's new stretched Sonerai ILS. The front cockpit is 6 inches longer to accommodate large pilots and the aft fuselage is extended 10 inches to house an 8 gallon aux tank. All new plans are available, as well as a complete kit that includes a pre-welded fuselage.



Ken Brock and the latest version of the Avion. It has a wider chord wing, an extended tail boom and a Rotax 277 engine. Flies like a little airplane.

Winner of the top homebuilt award at Merced '84 was "White Lightning", a 180 hp Glasair RG by R. A. "Dick" White, Sr. of Alamo, CA.





Cruisin' California III

Tom Criss and his KR-2.

Sportsman Pilot's annual pilgrimage to California to attend the Watsonville and Merced fly-ins was a week and a half of near total immersion in things aeronautical. Both events had what appeared to us to be record numbers of airplanes and people . . . and weather that unquestionably had the local Chambers of Commerce in a delirium. Every day was stunningly clear and with little wind.

The airplanes were equally stunning, with a good number of both homebuilts and antique restoration fresh from their owner's workshops. By coincidence, the antique winners at both Watsonville and Merced were early Stinsons. You can read about them elsewhere in this issue . . . plus a number of outstanding homebuilts and classics.

Otherwise, the two fly-ins were the fun events they always seem to be. Watsonville was still the gourmet's delight - especially if you like strawberries and artichoke hearts - and Merced made it through the 3rd consecutive year without the searing heat it **has** experienced in times past . . . or so some say. It's always been perfect on our trips there.

Between these two weekends, we were in Los Angeles (Anaheim, actually) hosted by our friends, Ken and Marie Brock. Essentially every day saw Ken and I off to reconnoiter the area's sport aviation hotspots - Corona, FlaBob, Oceanside, Chino . . . and even Sun Valley. Following are some intelligence reports we were able to obtain.

Tom Criss' KR-2

If you will turn for a moment to the ad section of this magazine and locate the Rand/Robinson page you'll see the "before" picture of Tom Criss' KR-2. It's the sleek bird sitting there on a taxiway with the Rand/Robinson pre-moulded cowlings, turtledeck, canopy, wingtips, etc. in the foreground.

A year ago Tom decided he wanted to put the KR back in his shop and make a number of modifications he had been dreaming up since first putting it into the air in May of 1980. He hangars it at Corona, CA, sharing space with Jim Simpson's beautiful Piper Pacer.

This KR has always attracted a lot of attention, due to its unusually sleek profile. Tom is 5' 6" so doesn't need a lot of headroom. Consequently, when he began building the airplane he "chopped and channeled" the fuselage by cutting the premoulded fore and aft turtledecks by 2 inches, from nose to tail.

In this latest teardown, he has chopped away still more of his cowlings, lowering the cooling air inlets and cutting down on their area. He installed louvers in the sides to exit the air in a low pressure area and fitted a cowl flap. The result is cylinder head temps around 300 degrees and an oil temperature around 200.

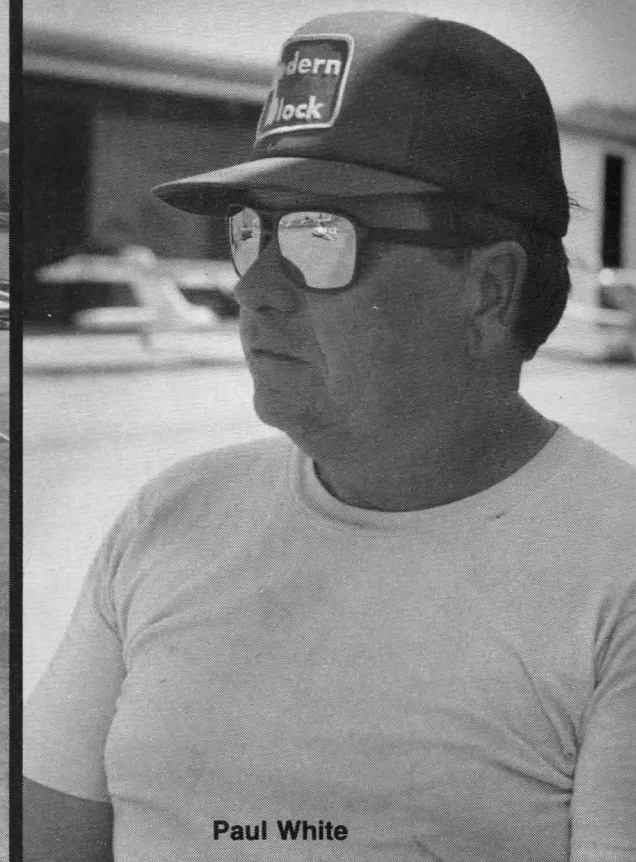
His KR has always been powered by a Revmaster 2100 with a geared starter and a

tuned exhaust. The heads have been ported and relieved and the compression has been raised to 8 to 1 . . . which means Tom has to feed it a steady diet of 100 octane. He has two props, a Great American climb prop that will produce 1400 fpm with just one aboard and 900 fpm with two, and another, a cruise prop by K. P. Rice. He still gets about 1200 fpm, solo, with it - and 10 mph more in cruise. Top speed with the Rice prop is 180 mph indicated and 170 at cruise.

Tom used the upholstery kit available from Rand/Robinson and stuffed all the instruments he could into the panel. At first his airspeed indicator's static air system opened directly into the cockpit . . . but then he began to notice that the airspeed jumped ahead 10 mph when he lowered his landing gear. An alternate static source cured that quirk. Lights, a radio, transponder and a Hamilton vertical card compass are some of the other goodies Tom has installed - plus heel brakes.

The KR was fitted with flaps when it was built in 1980 and are indispensable, as far as Tom is concerned. They slow the airplane down about 10 mph, but even more desirable is the steepening of the glide path on approach. Without them, the KR comes in flat and visibility ahead is not the best. With them, Tom says, it's more like approaching

Paul's pusher at Oceanside Airport.



Paul White

in a Cessna 150. He normally approaches at 80 mph, comes over the fence at 70 and the numbers at 60 . . . then wheel lands. Initially, he tried to 3-point the airplane, but floated and bounced all over the place before he could get the thing down. With the Rev-master, the KR is a little nose heavy, so it wheel lands quite easily and naturally, Tom soon found . . . so he stopped fighting it and greases it on with ease now.

The stock KR main gear is employed, but is fitted with Lamb tires and has a lighter aluminum (instead of glass) fairing. The tailwheel is all new - with a chromemoly steel spring and a larger wheel.

Empty weight came out at 565 pounds, which is a little more than Tom wanted, but not bad, he concedes, considering the extra stuff he has built into the airframe.

Before tearing the KR-2 down this last time for rework, Tom had flown it 175 hours since 1980. That's an average of 58 hours for each of the three years, about par for the course for a sport flyer. He enjoys the airplane very much - both flying and working on it. Tom is self employed - he pin stripes cars for a living, which is a skill much in demand in car crazy California. He also does airplanes, of course, including the prototype KR-1 which is on display in the EAA Museum at Oshkosh.



Shoestring. So, you can imagine my surprise when after zipping down to Oceanside Airport one day with Ken Brock in his T-18, "Sweet Marie", we caught ol' Paul in the act of supervising the test flying of (gasp!) a little Kawasaki powered "lightplane".

Well, I mean . . . geez! At 50 hp, this thing was just a couple of steps beyond an ultralight!

At least that's what we told Paul as we kidded him about his "selling out to the low and slow crowd" and other such foolishness. Actually, his pusher was a really neat little airplane, beautifully crafted (you'd expect that from him) and in its finer points, chock full of clever innovations.

First, if the configuration looks vaguely familiar - you're right, this is a modified version of the "Polish Pusher" featured in EAA's **Sport Aviation** magazine several years ago. Paul had been fiddling around with his own ideas of what a "lightplane" should be, progressing as far as getting a 3-view on paper. But then a friend from San Diego saw it and said, "Stop right where you are!" He rushed home and returned shortly with a set of J-1 (Polish Pusher) plans. They were amazingly similar in overall configuration to Paul's - enough so that he saw no reason to "reinvent the wheel."

Now, Paul White is probably genetically

Kawasaki for the VW shown in the Americanized J-1 drawings, fitted it with a 2.25 to 1 belt reduction unit, added a muffler and installed a 3 blade prop.

Construction is largely out of plywood, spruce and "hardware store aluminum." The wings, ailerons, rudder and elevator are fabric covered, but the remainder of the airframe is sheathed in 1/32" plywood. The wing ribs have very wide capstrips so Paul could glue on the fabric rather than having to rib stitch.

The leaf spring main gear is of 1/2 inch heat treated 7075 and the tailwheel is larger than normal - all of which is intended to make the little bird a "land anywhere" (within reason, of course) machine. Hydraulic brakes stop and help steer it when on the ground.

The surprisingly roomy and comfortable seat is accessible by swinging over the canopy - to the left side. You have to watch the aft canopy frame when closing it, but having assumed the pilot-in-command position, the visibility is essentially unrestricted . . . or so I thought. Paul walked around to the tail, raised it to show me the airplane's straight and level attitude, and what he was trying to show me was absolutely correct - it's like a helicopter. You have 98% of the view you would in an open ultralight, yet still have some structure around

Paul White's Pusher

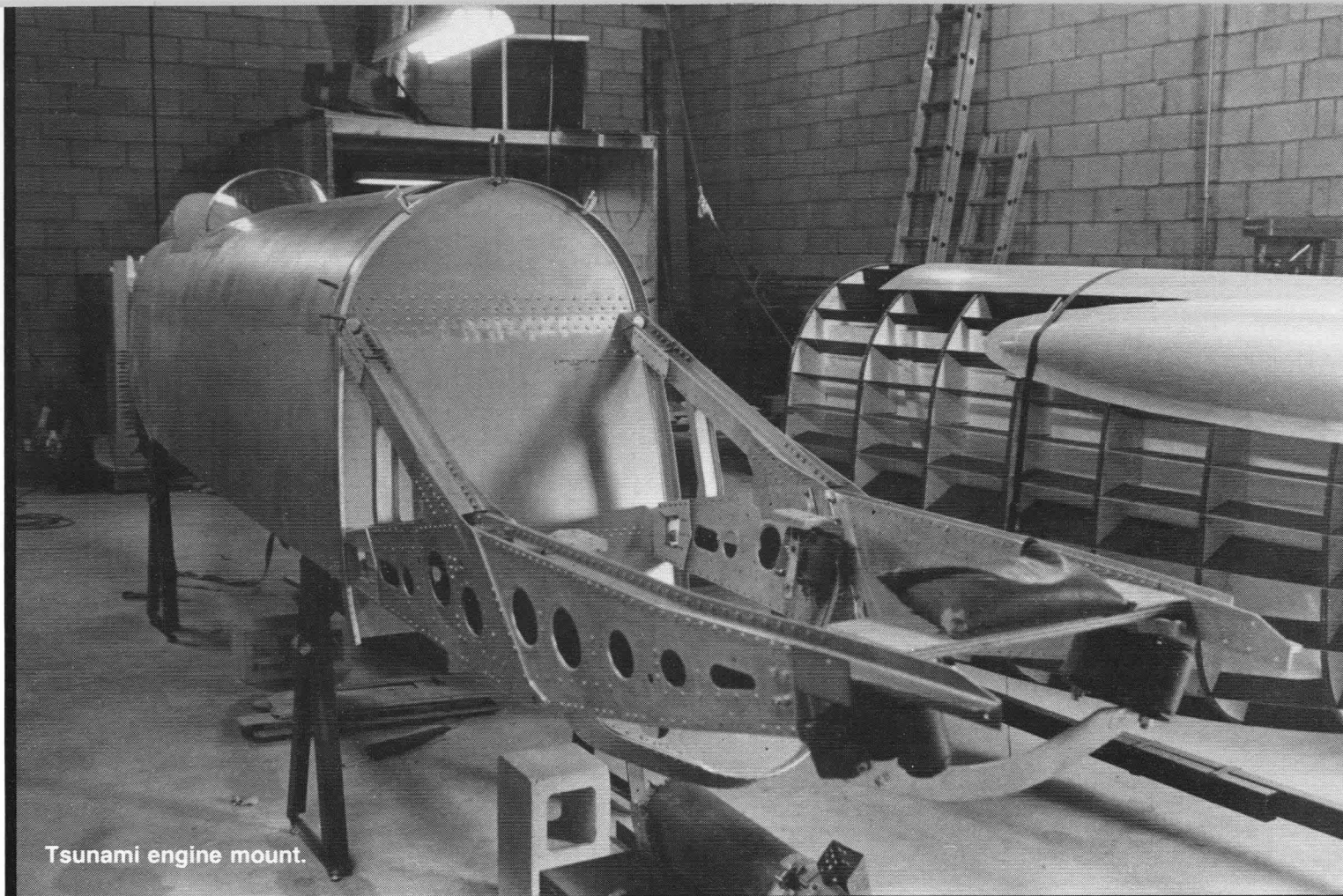
Paul White has been associated with high performance homebuilts as long as I've known him - winning armloads of trophies in the early 70s with his beautiful modified Midget Mustang, and still more with his mighty Kong, a modified, high powered T-18 he built in the late 70s. Concurrent with all this building activity, he was also crew chief for Ray Cote throughout those years he was dominating Formula I racing in the legendary

incapable of precisely following a set of plans - if he can think of a better way to do something, or, at least, a **different** way that suits him, he HAS to do it. He found so many opportunities for changing things in the J-1 drawings that the resulting airplane only superficially resembles the little pusher designed in Poland in the 60s.

First, he lengthened the tail boom about 14 inches, then substituted a 50 hp

you.

Including goodies like a 6 channel RST radio Paul built, the empty airplane tips the scales at 390 pounds. It carries 11 gallons of auto fuel (mixed 24 to 1 with 2-cycle oil), which the Kawasaki sips at a rate of 3 1/2 gph. It takes off in 150 to 180 feet, climbs at 500 to 600 fpm, cruises between 80 and 90 mph and touches down in the 35 to 40 range. Paul says he has about \$5,000 in the pro-



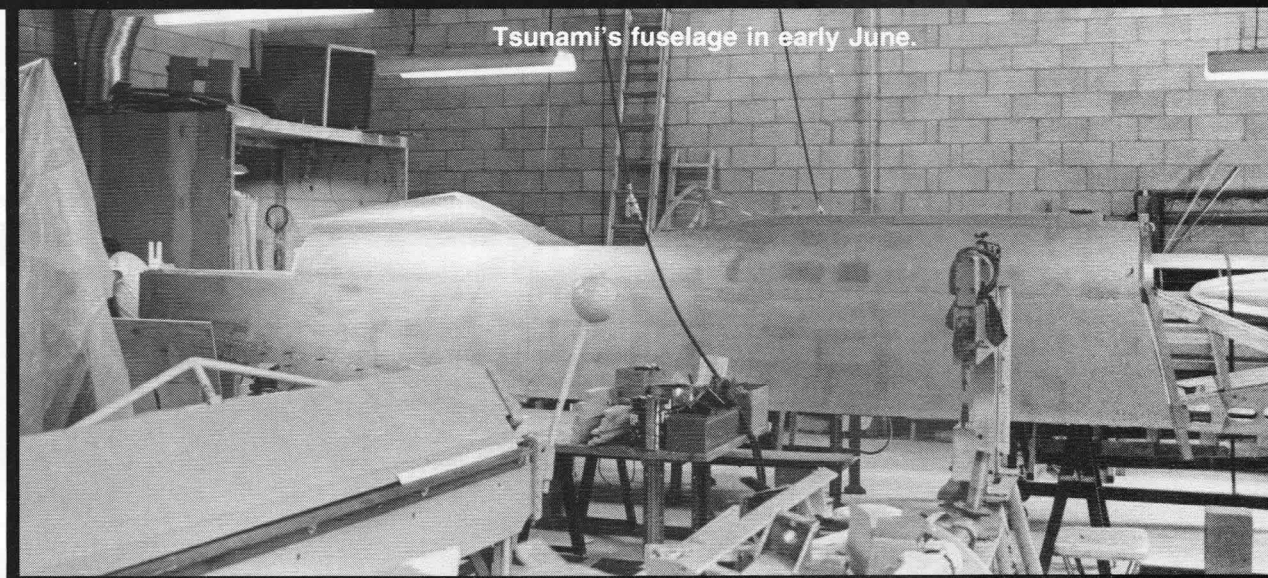
Tsunami engine mount.

totype . . . and thus can't see how less complex ultralights can be so expensive.

At the moment, Paul and Vernon Payne, designer of the famed Knight Twister, are designing a new airplane that combines the best features of the J-1 and the airplane Paul originally envisioned but shelved when he saw the J-1 plans. It will have a welded steel tube frame, a constant chord wing with foam core, plywood faced wing ribs . . . and some configurational changes. The airplane shown here has a tendency to pitch down with application of full power, due to the high thrust line. The wing will be raised on the new airplane and the horizontal tail will be mounted about halfway up the vertical tail - both to have the effect of lowering the thrust line to lessen pitch change with power application. It likely will be VW powered.

The reason few have heard about Paul's airplane is because he built it . . . and flew it . . . in seven months (last August to February of this year). He says, "I built this because I got tired of the 'white knuckle time' in the hot rods I used to build. I can land this one anywhere. I'm getting older - wanted something that was fun." If he follows through with the new pusher and it flies as he expects it to, Paul plans to market it as a homebuilt.

We'll keep you posted. ☺



Tsunami's fuselage in early June.

the Griffon powered P-51, the Red Baron . . . and to blow the doors off the warbird based unlimiteds at Reno. The racer would later be fitted with floats and an attempt would be made to break the world's seaplane speed record of 440.681 mph set in 1934 by Italian Francesco Agello in the government sponsored Macchi-Castoldi MC-72. Tsunami's owner and bankroller is industrialist John Sandberg, who will fly the airplane in the record attempts. Its designer is Lockheed aeronautical engineer Bruce Boland, who

do about 520 mph as a landplane and about 450 with twin floats. Under construction for nearly three years now, it has missed the originally projected completion date by over 12 months and, as you can tell by the pictures, still had a way to go when Ken Brock and I visited it in early June . . . but that is nothing unusual for such a project.

As of June the airframe was essentially complete and the time consuming system installation phase was just beginning. Having missed their original target date, the builders are now wisely paraphrasing Yogi Berra when asked for the new projection: "It will be finished when it's finished."

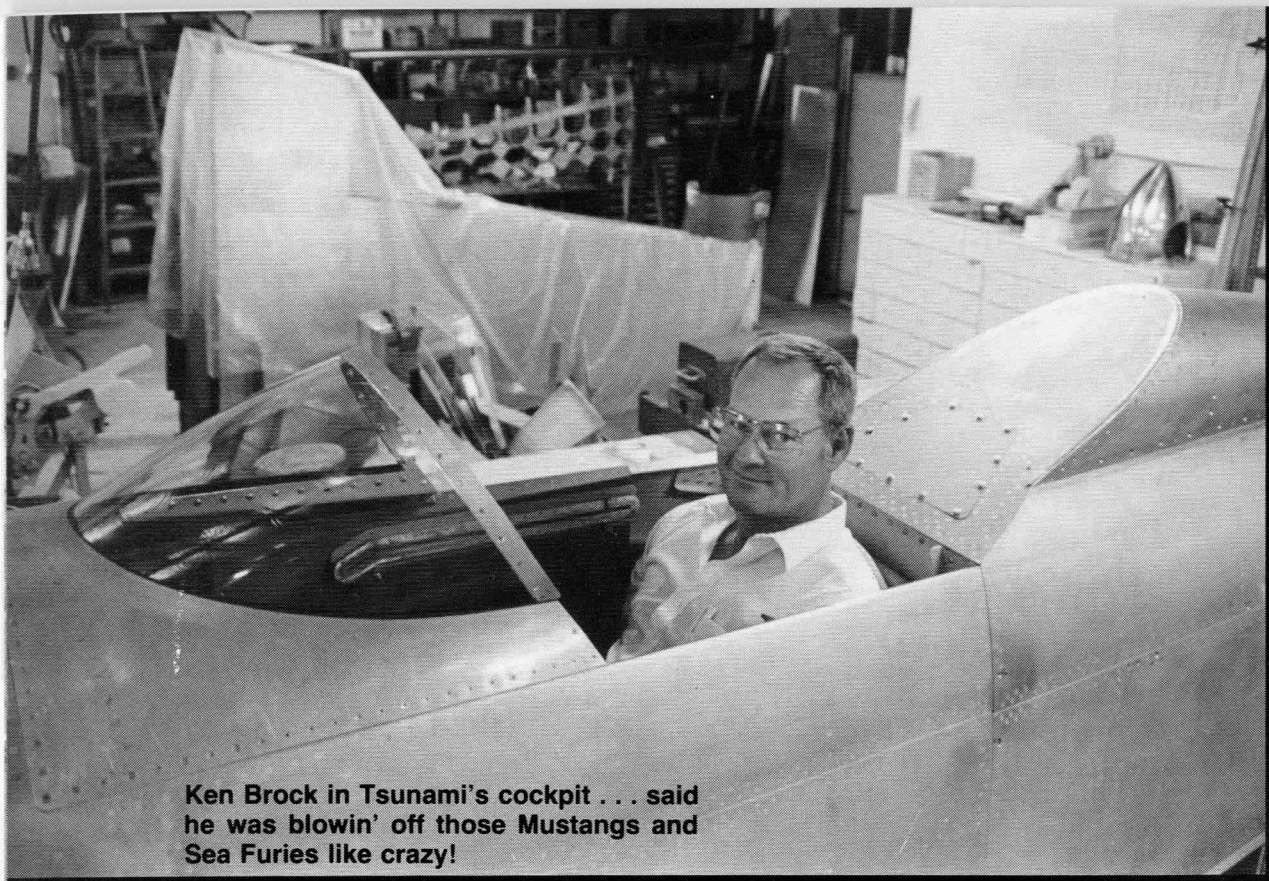
There have been some changes made since I last saw the project in February of 1983. Originally, the engine was to be a simple, light single stage Merlin . . . but, then John Sandberg came across 10 sets of late model (Dash 724) civilian Merlins which are capable of higher sustained power output than the older World War II -7s and -9s. With water injection and the usual bag of racing tricks liberally applied, such an engine will crank out around 3,000 hp. An engine has already been built up at Sandberg's aircraft engine overhaul business in Minneapolis

Tsunami

For those of you who are not EAA members and/or for whatever reason did not read my article in the May 1983 issue of **Sport Aviation**, Tsunami (pronounced "SUE-NOM-EE") is a professionally designed, well financed effort to build an unlimited air racer capable of topping the current world's speed record for reciprocating engined, propeller driven aircraft set in 1979 by Steve Hinton in

also heads the team (and company) building the racer. Lockheed engineer Pete Law and retired Lockheed systems specialist Ray Poe are other key team members.

Tsunami is, in the briefest of terms, the smallest, lightest, simplest and sleekest airframe that Bruce Boland could conceive of to bolt onto the back end of a race prepared Rolls Royce Merlin engine. It is projected to



Ken Brock in Tsunami's cockpit . . . said he was blowin' off those Mustangs and Sea Furies like crazy!

and will be raced at Reno in September in a stock Mustang. With a 2-stage blower, this will be a heavier engine than originally

planned, so some changes will have to be made to mount it in the very tight engine compartment of the Tsunami, probably in-

volving rotating the compressor housing and switching to a downdraft carb. This, in turn, will move the carb air scoop from the bottom to the top of the fuselage. It will be a flush type, similar to the familiar NACA scoop.

Originally the racer's oil tank was to have been the inside of the vertical fin. This has not proven feasible, however, so a tank has now been mounted in the fuselage, just behind the pilot.

Ken and I were permitted to try on the cockpit for size and to sample the reach and feel of recently added items like a control stick from the rear cockpit of a T-6, rudder pedals from a T-34 and a throttle/prop/mixture quadrant from a T-34. Everything fell right to hand (and feet), as they say in the auto magazines, and should pose no discomfort problems for the pilots. The pilot will sit in a somewhat supine position, the better to resist G loads in the turns at Reno. Steve Hinton, incidentally, has been selected as Tsunami's race pilot.

We had the pleasure of meeting again with Bruce Boland and Ray Poe to discuss the project and, with them, anxiously await the completion and flying of this very interesting and highly promising racing aircraft.



A 'Homebuilt' T-38!



The world's only "homebuilt" T-38.

On another day Ken and I flew to the Chino airport to visit Frank, Dennis and Brian Sanders to see how modifications to their 1983 Reno winning Sea Fury were progressing. We found them rebuilding their mighty P&W R-4130 and were able to inspect the new, taller vertical tail. The airplane is going to be even faster than last year - so it will be interesting to see what the Mustang people have up their collective sleeve to be competitive . . . we are hearing rumors of Griffon powered -51s, shorter wings and such being readied for September at Reno.

Afterwards, Ken and I did a little hangar crawlin' around Chino's vast ramp and struck paydirt in the corner of one of them. Would you believe that a team of young technicians has scrounged up parts and pieces from all over everywhere and has put them all together to come up with the first and only privately owned Northrop T-38 Talon!

Chuck Thornton of Los Angeles is the owner and the team that built up the airplane was headed by Jim Tyner, a graduate of San Jose State's aviation maintenance school and, for a time, a structural modification

specialist at NASA's Ames Research Center.

The basis for the project was a damaged fuselage retrieved from, would you believe, a barn near Stockton, CA. It had been bellied in, had all the systems, wing, engines, flight controls and landing gear removed, then sold as junk. With this as a start, Jim and his team began a two year search that scoured the U. S. for T-38 parts and carcasses. They ultimately turned up 6 other fuselages and 10 sets of landing gears from which to rob parts to put together the nearly completed airplane you see pictured here. A lot of structural remanufacture was needed and all the systems had to be overhauled, so a lot more work was required than simply bolting on parts from other airplanes. In addition, a complete corporate type avionics system had to be devised, fabricated and installed, ejection seats had to be located and rebuilt, essentially new wings had to be built, etc., etc. It has been a very complex and difficult undertaking, but should be completed this summer.

Interestingly, it has developed that there

is a demand for an aircraft such as this. At the time of our inspection of the T-38, some LA aerospace companies were already standing in line to lease it as a chase plane for various new projects. A company was being formed to market the services of the aircraft and Jim Tyner and his crew were to stay on to provide the maintenance and technical back-up to keep it operational. They had, in fact, not only rebuilt an airplane, they had also created professions for themselves.

Initially, the T-38 was intended as a "war-bird" type sportplane to fly and display at fly-ins - and this will still be done occasionally. In early June, the plan was to fly it to Oshkosh '84 . . . which brings to mind an interesting situation. It may be hard for some of you older heads to swallow, but there will be a whole generation of Air Force and ex-Air Force pilots at Oshkosh who will look at the T-38 with the same wistful eyes and experience the same pangs of nostalgia that you World War II veterans do when you see a T-6 rumbling by.

Time just keeps stealing away, doesn't it?



Lancer 200

Remember "Sweet Mildred", the very fast KR-2 I wrote about in the Winter 1983 issue of **Sportsman Pilot**? Well, its builder, Lance Neibauer of Redondo Beach, CA has now designed, built and flown his own 2-place, side-by-side, Continental O-200 powered, retractable geared, all-composite sportplane called, of course, the Lancer 200. Most of the projects Ken Brock and I visited and that you are reading about here afforded us the opportunity to fly to see, but not this one. Los Angeles has been called a microcosm of what the rest of the country will soon be. As you all know, a national trend that has developed during the hard economic times of the past few years has been an unprecedented outbreak of entrepreneurship - people starting their own small businesses. Well, LA has **always** been an entrepreneur's paradise. One of the reasons why that sprawling, endless suburb called "the basin" can exist and function is because **everywhere** there are free enterprise parks, long buildings with offices and work spaces for rent to small . . . **very** small . . . businesses. There are literally **zillions** of 'em . . . and one is leased to an outfit named Neico, which is a contraction of the "Neibauer Company". Located right off and fully visible from one of those fabled LA freeways, it must have been the object of a lot of quizzical looks this spring, because sitting out in a parking space in front of Neico was a little white airplane fuselage - the Lancer 200. You couldn't begin to think of a more improbable place for an aircraft skunk works - there's a barber shop next door - but that's LA!

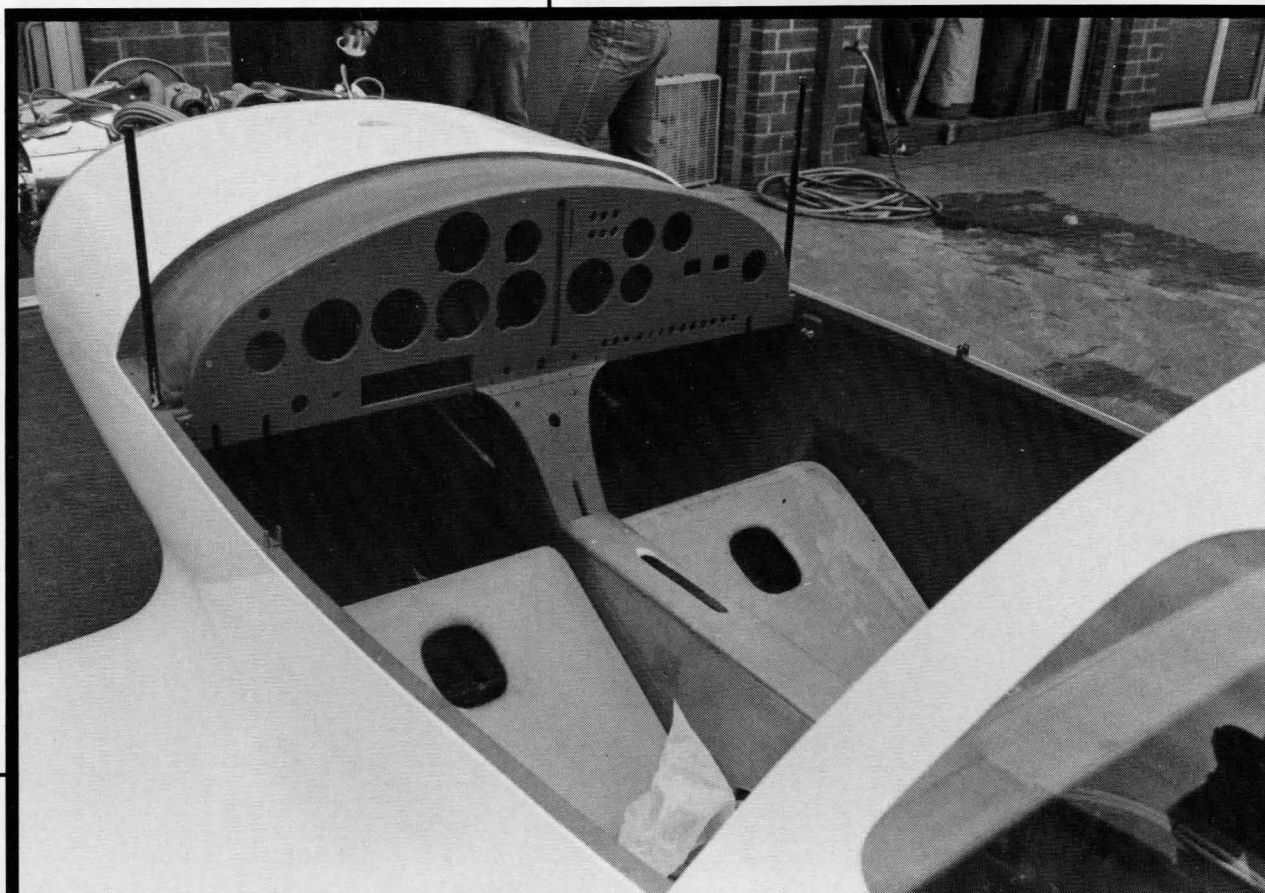
Anyway, as you can tell in the accompanying pictures taken in early June, the Lancer 200 is a very streamlined little airplane with an extreme degree of curvature in the fuselage, possible only with composites. The pro-

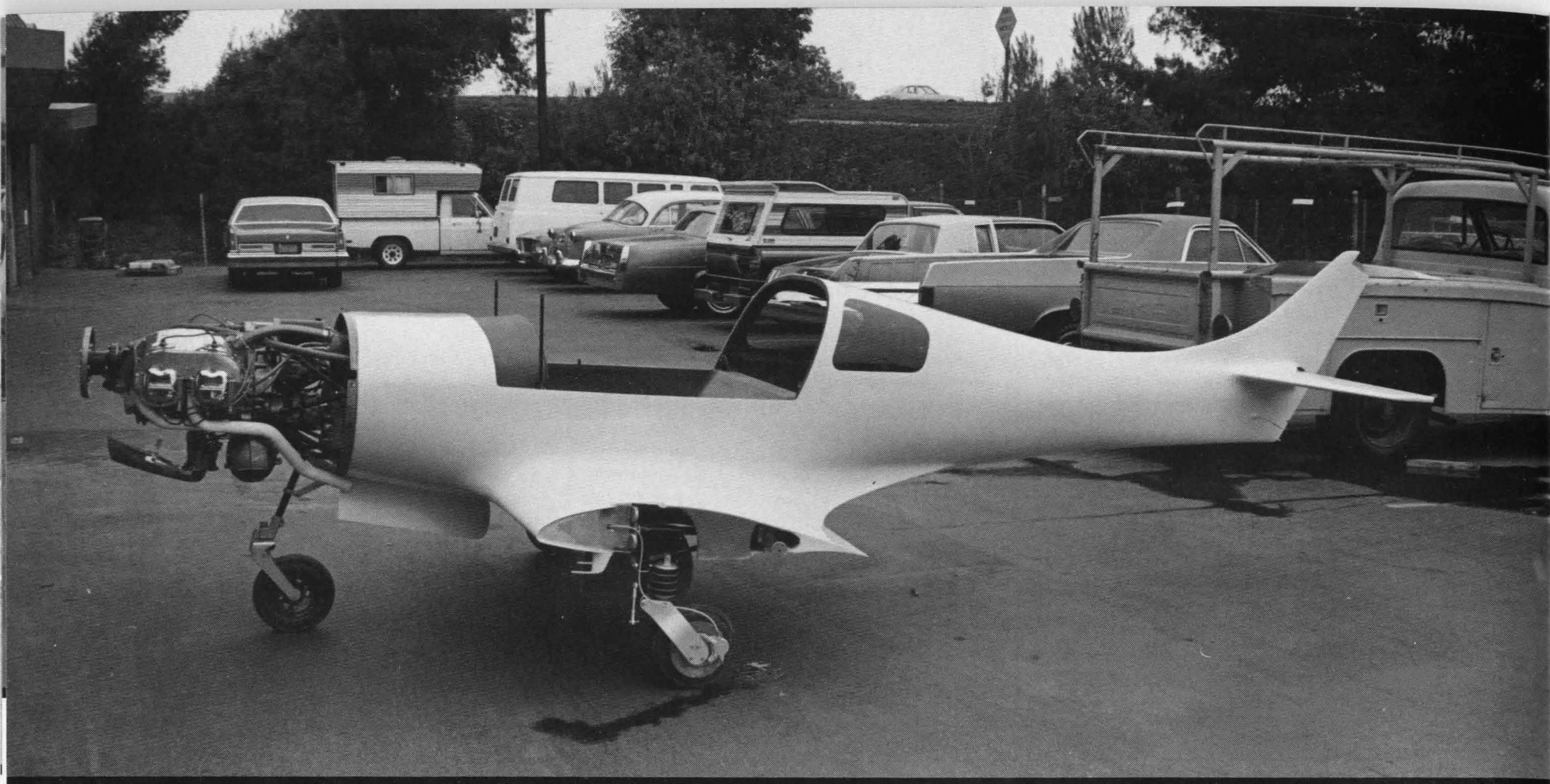
totype was carved out of foam and glassed much like a VariEze, but after the flight testing is complete and any necessary modifications are made, it will be used to take splashes from to make production molds so the design can be marketed much like a Glasair. Lance intends to offer the airplane in a number of kits, any one of which will be available separately so builders can stretch out the cost.

Most of the foam core structure was glassed with 7781 E glass, with unidirectional and bidirectional cloth used where appropriate. Small amounts of Kevlar and carbon fiber were also used. The resin system was the newest version of Safe-T-Poxy, a thinner mixture that wets out the cloth much

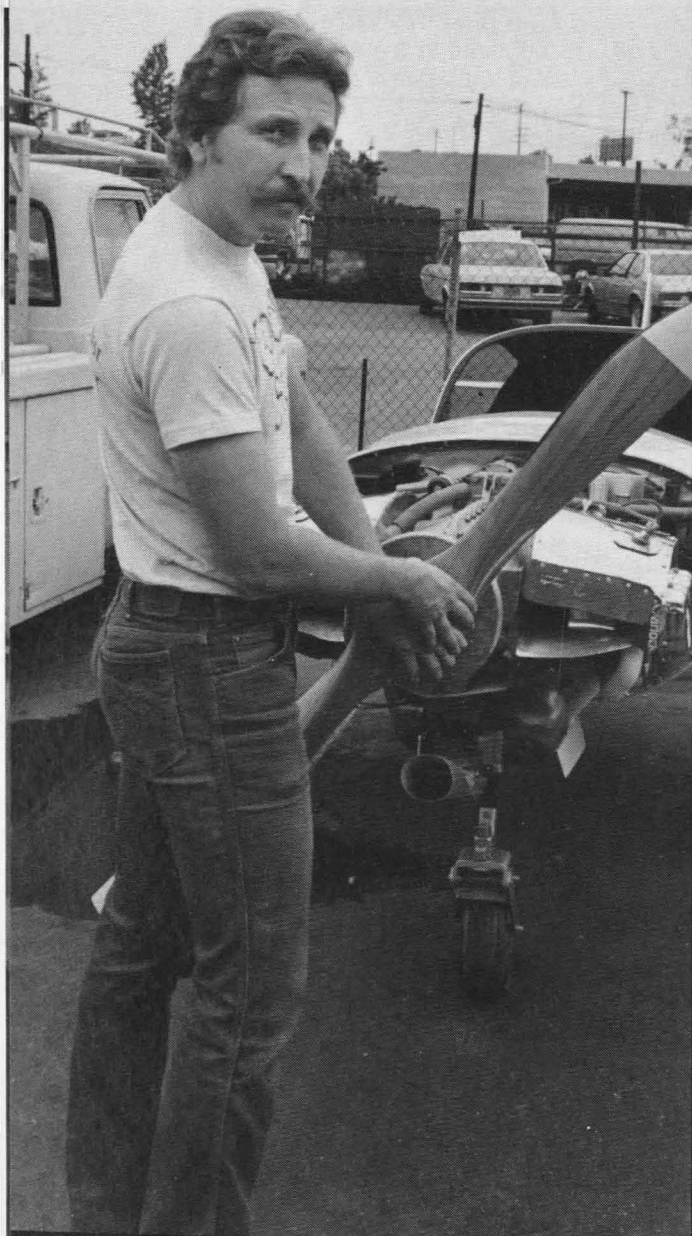
easier and makes for a lighter layup for a given strength, if it's done correctly. It also has a heat softening threshold of about 300 degrees, as opposed to the 193 degrees of the earlier blend. Lance thinks it's the greatest stuff to come along yet and will specify it for his airplane.

Up front, the airplane has an O-200 right out of a Cessna 150. In fact, Lance bought the whole 150 to get the engine . . . and the instruments, battery box and battery, cables, hoses and lots of those other pesky little items that dime and dollar a homebuilder half to death. After plucking out everything he needed, Lance sold the remaining hulk for \$1,500 or so . . . and smiled all the way to the bank! Older 150s are cheap enough





Lance Neibauer



today that he intends to recommend the practice to his Lancer 200 builders.

The fuel system to feed the O-200 consists of two wing tanks that can be selectively pumped to fill a header tank behind the firewall, which, in turn, supplies the engine. The total capacity is about 33 gallons. More fuel **could** be carried in the wings, but with a range of up to 1200 miles possible with the 33 gallons, Lance feels extra capacity is simply not needed.

Moving back along the slippery fuselage, the canopy is a stock Dragonfly unit, mounted on a parallelogram type of hinge that swings it up and out of the way to permit easy entry to the cockpit. It is spring loaded and operates with just finger tip pressure, yet is quite solid in its support of the big plastic bubble. Latches at the four corners hold the canopy down in flight. Fixed windows behind the canopy open up the aft

quarter views from the pilot and crew seats.

The cockpit, itself, is 41.5 inches wide and has the supine seating most of the designers of low frontal area homebuilts seem to favor today. There are dual sticks and although compact, the panel and the rest of the controls are thoroughly conventional. Behind the seat is a large baggage area with a generous weight allowance . . . in fact little affecting the weight and balance of the airplane.

Back aft, the tail feathers are all balanced, the elevators with a lead weight on the end of a centrally mounted arm that pivots up and down inside the vertical fin. The control system is composed of push/pull and torque tubes, with the exception of the rudder cables.

The most advanced part of the Lancer 200 is its 23 feet wing. It incorporates the new NASA NLF-0215F airfoil. It is designed to be reflexed (by moving full span flaperons **up**)



in cruise to counteract its high pitching moment. The leading edge is shaped to provide laminar flow up to 50% of the chord, yet if littered with bug remains, will not lose a lot of lift. The drag will increase but lift won't decrease significantly . . . at least that's what it did in NASA's wind tunnel. The flaperons are mass balanced to 90% in the prototype . . . which involves 9 pounds of lead. Each wing is attached with 3 bolts and the flaperon torque tubes have locator pins and $\frac{1}{32}$ " bolts to lock them in place when the wing is attached.

The Lancer 200's tricycle landing gear is a particularly clever piece of work . . . one Lance is quite proud of. It is a simple arm type with welded up struts and arms and off-the-shelf Ercoupe rubber donuts for shock absorption. Lance describes it as "half way between a Mooney and an Ercoupe gear." The retraction system is actuated by the same electro/hydraulic power pack used on the Piper Arrow, Mooney and others. It is readily available new or used and has given good service. Over center links are used as downlocks and the power pack can be disengaged to permit the gear to free fall, in the event of loss of electrical power.

The projected empty weight of the Lancer 200 was between 675 and 700 pounds and the gross is 1275. Top speed is expected to be around 210 mph and the stall should occur at 55 or so, with flaps. Flown in late June with a new Warnke Almost Constant Speed prop, the airplane is cruising at 196 mph indicated at 75% . . . and promises to be a little better when the gear doors are sealing better, according to Lance. At last word, he planned to fly it to Oshkosh, so the marketing effort will have started by the time you are reading this.

Expect it to be quite a sensation. ☺

Miles & Atwood Spl.

You all know Bill Turner. He's the fellow born about half a generation too late . . . too late to have been an air racer when the fabulous Gee Bees, Lairds, Wedell Williams, et al, were blazing around the pylons at Cleveland. Not to be denied, however, Bill has embarked on a career of building full scale replicas of the old speedsters so he can fly 'em and let the rest of us relive with him the sights and sounds of the Thirties. So far, he has completed a Brown B-2 "Miss Los Angeles", which is flown fairly regularly, and a Gee Bee Z, which is currently on display in the NASM in Washington.

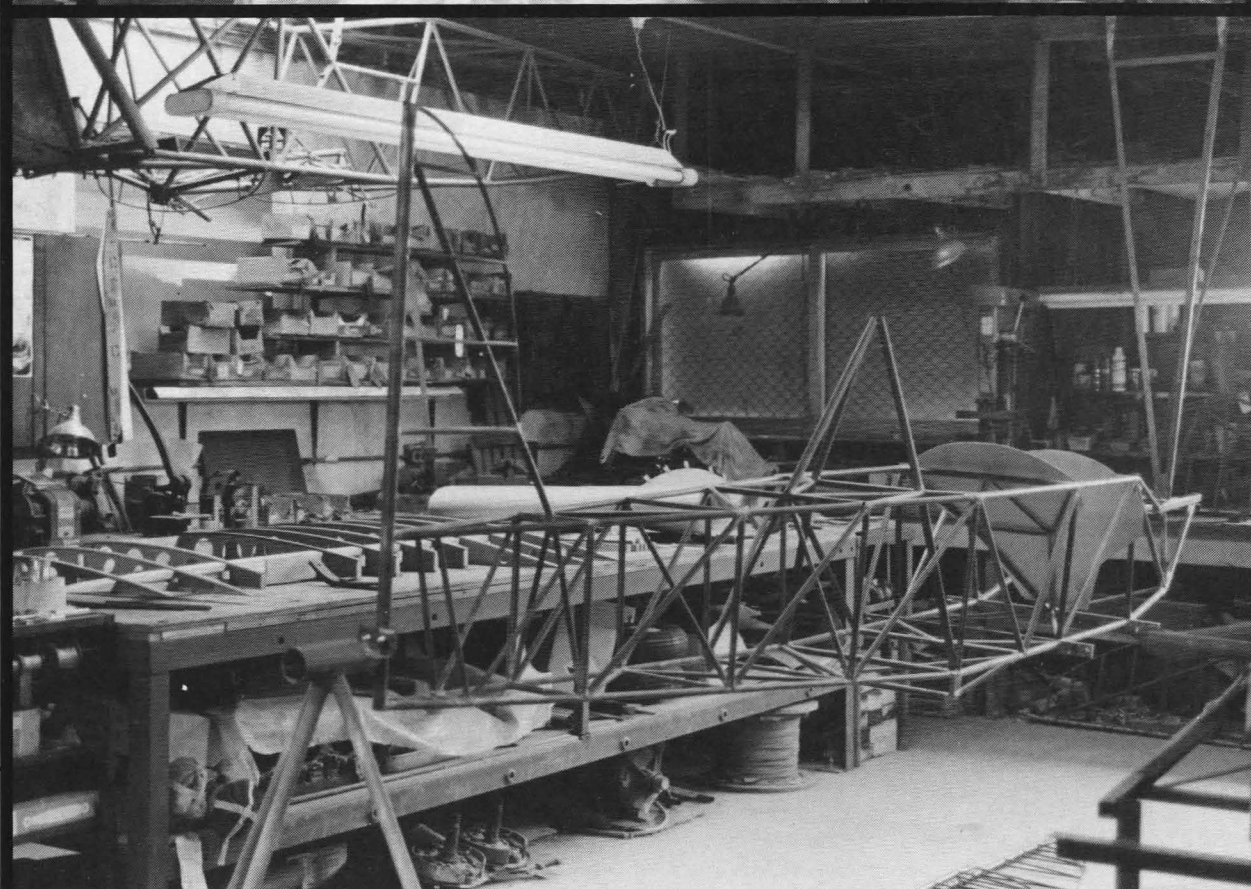
At the moment Bill is overseeing and assisting in the construction (Ed Marquart is the principal builder) of a replica of the Miles and Atwood Special . . . for none other than Leon Atwood, the co-owner with Pilot Lee Miles of the original 1933 design by Larry



Bill Turner in Ed Marquart's shop. How's this for a *short* wing!



The Menasco engine for the Miles and Atwood Special.



Brown. As you can see in the pictures, the project is well along and should fly later this year or in early '85.

The airplane is surprisingly small, especially the wings which span only 16 feet 8 inches. The fuselage is 16 feet 9 inches long and is about as skinny as fairing straight behind the inline Menasco engine would permit. The original racer used a C4S, but Bill will use a D4-87 . . . because that's what Mr. Atwood supplied him with and is all that is available. In stock form it is rated at 125 hp - 134 for one minute. To be painted the bright green of the original, the Miles and Atwood Special should be quite fast. The souped up original went 223.159 mph in 1936, so even a stock engine should move it right along.

The plan is to have Bill fly the racer to fly-ins for a few years, then donate it to a museum.

It's going to be exciting to see. 🍷

Cruisin' Spectacular

Not all of our California cruisin' was airport hopping, pleasurable as that pastime is. We

also enjoyed some long distance cruisin'. Departing the Watsonville Fly-In, we headed the Brock's turbo 210 down the Pacific coastline for a look at some of the most spectacular scenery the U. S. has to offer lightplane pilots. After swinging out around the posh Monterey peninsula, we began feasting our eyes on the fabled Big Sur. Essentially, it's a mountain range, the Santa Lucia, that juts right up out of the ocean. The sheer cliffs with waves crashing against their rock strewn bases are both spectacularly beautiful and spine chillingly awesome. State Highway 1, the famed Coast Highway, clings so precariously to the mountainside that some motorists find themselves reaching for a barf bag after a few switchbacks. Last winter, massive mudslides closed the highway for months and the scars in the slopes were readily visible from our birdseye vantage point.

Further down the coast, the mountains angle inland a bit, leaving a sort of steeply rising plain between them and the sea. In the distance, perched atop one of the higher foothills of the Santa Lucia, we could see San Simeon, William Randolph Hearst's ec-

centric pleasure palace from an age gone by. Largely built before the imposition of the confiscatory income taxes we now enjoy, Hearst's castle was used by the fabulously wealthy newspaper publishing baron to entertain the great and near great of the 20s and 30s. Lindbergh, for example, once occupied one of the sumptuous guest suites. Hearst often shuttled guests up from LA in a special 1000 hp version of the Vultee V-1-A. That airplane still exists . . . in the estate of the late Sid Shannon of Fredericksburg, VA.

After a wide circle over the hilltop to snap the picture you see here, we flew on down the coast, eventually encountering a low fog bank that lay just along the beach, with its misty fingers reaching up the slopes to engulf villages and towns that overlook the vast Pacific. It was eerie to look down and see streets, one side of which was bathed in sunlight while the other was socked in completely . . . or to see a hilltop house barely projecting through the fog layer, just floating there in a sea of gently undulating cotton candy.

What privileged, wonderful moments we lightplane pilots share! 🍷



MIKE MCCLUSKEY'S **EAGLE**



Frank Christensen must be feeling pretty good about his Eagle these days. New ones turn up at every major fly-in - and I've yet to see a bad one. When Frank took the leap into the homebuilt kit business a few years ago, he was determined to set a new standard for kit quality and in the comprehensiveness of his building instructions. Well, the proof is in the pudding, as they say, and judging by the Eagles builders are turning out, one would have to say that Frank has been eminently successful on all counts.

With so many beautiful Eagles around, you've got to sit up and take notice when one of them gets singled out for special attention. Such an airplane is Mike McCluskey's absolutely stunning jet black Eagle with airbrushed multihued "feathers". This aeronautical jewel was a sensation at Watsonville '84 - a stand out in a field of outstanding examples of the homebuilder's craft.

To better appreciate the caliber of craftsmanship that went into this airplane, you need to know something of the background of its builder. Mike McCluskey, who is 35, was born and grew up within window rattling distance of LA International. That everyday familiarity with airplanes apparently bred if not contempt, at least a degree of indifference toward them, because he grew up car crazy instead of airplane crazy. He began fixing up, modifying and, finally, restoring mostly foreign sports cars through his teens so that by the time he entered UCLA as a mechanical engineering student, he was able to transform his hobby into a money-making venture profitable enough to pay a good share of his college

expenses.

Mike lived in the seaside community of Playa del Rey and one of his neighbors was that noted guru of the go-fast crowd, Carrol Shelby. One day Shelby happened to see a Sunbeam Tiger Mike had restored and was so impressed he hired the budding young entrepreneur to restore a couple of AC Cobras. These cars became showcases for Mike's restoration talents and soon he had a full time business on his hands, first almost exclusively involving Cobras but, later, branching out into Ferraris and other exotic sports cars. After graduation from UCLA, he simply continued his newfound profession, never working a day as a mechanical engineer.

In recent years, the organized sport of racing vintage performance cars has blossomed all over the U. S., placing tremendous demands on restorers like Mike who were already well known for their work on potent pieces like the Shelby Cobra. Although he loved his work, Mike ultimately had to seek other outlets in order to maintain his perspective. He found one in the front seat of a friend's S-2 Pitts. After an exciting ride, he thought to himself, "I've gotta have one of these things!"

Mike was doing well with his business but he could not afford to plunk down the full price of an S-2 at the time, so he began to cast about for an alternative. He learned quickly enough that the best option open to him was homebuilding - right up his alley, of course - and that his choices, based on what he wanted in an airplane, were narrowed to the S-2 kit and the then new Christen Eagle. He checked both out thoroughly and came

to the conclusion that the Eagle best suited his needs and desires.

Mike signed up for Serial Number 10 in the Christen Eagle series and purchased the wing kit late in 1978. He began work on it that December. There were delays in the first year or so of the program as Christen Industries worked its kit production schedule through its first cycle, so Mike found himself working on the airplane in fits and spurts. The fabric was a year and a half in coming, for example. Ultimately, production got up to speed, and in the latter stages of the project, new kits usually arrived about the time Mike needed the next one.

Like all the other Eagle builders I've ever talked with, Mike has nothing but praise for the Christen kits and the "programmed learning" approach incorporated in the building instructions.

This was his first airplane project, but he was able to plow right through the various kits without a real problem of any sort. If anything, the project was perhaps too much of a lock step process for someone with Mike's expertise with tools and the building process, itself . . . but, of course, the Christen system was developed for rank amateurs instead of pros.

Fortunately, there were challenges for Mike. He chose to buy a used engine, for example, and overhaul it himself rather than buying a new one. His Lycoming IO-360 had come out of a flight school Arrow with 1200 hours on the tach. With a friend who is an A&P looking over his shoulder, Mike tore it down and proceeded to perform a major overhaul. All the reciprocating parts were matched up in weight . . . with some interest-

ing revelations along the way. The rods, for instance, were very close in weight, but four new pistons right out of the factory box varied by as much as 9 grams. Otherwise, Mike - who, remember, is accustomed to looking at some pretty sophisticated racing engines - thought the workmanship inside the Lyc was "pretty nice."

The Bendix fuel injection system was sent out for overhaul and the accessories and prop were purchased new. Naturally, the Christen inverted system was used.

In retrospect, Mike feels there was a big plus gained by overhauling his own engine. He saved a lot of money, of course, but he also came away from the experience with a lot of confidence in his Lyc.

"It takes away a lot of the anxiety when you are flying over mountains," he said with a sly grin.

There were a few expressions of individuality in the airframe, also. Mike installed lights and strobes, mainly to stay in the good graces of controllers at the busy Torrance, CA airport where the Eagle is based. ("They begin to get nervous as dusk approaches if you don't have lights.") Other mods or additions included carbon fiber fairings for the lower wing root and the landing gear leg/fuselage intersection, a flush fuel cap, a relocation of the NAV and com antennas, with the NAV going inside the lower wing and the com on the belly just behind the exhaust. Instruments not included in the Christen kit included a 2 inch electric T&B, a Christen digital fuel flow meter and a Hamilton vertical card compass. The most visible alteration in the airframe . . . and you have to look for it . . . was the addition of "aerobatic windows" in the sides of the rear cockpit. Made of Lexan, each has a close fitting cover that stays in place when the Eagle is not doing flip-flops. Completely unseen from the outside is a rearward extension of the baggage compartment (behind the pilot's head) with a wire mesh screen at the aft end. Mike is **very** limited in the weight he can stuff into the compartment, but the additional 18 inches of depth means the difference between going grubby at a weekend fly-in or having a change of clothes.

The REAL challenge for Mike, however, was the paint job. He figures he has about 3,000 hours of labor in the airplane . . . with a thousand of it that beautiful black finish alone!

He covered the airframe in the Ceconite provided in the kit and, following its instructions, filled it with 4 coats of nitrate dope, followed by 8 coats of butyrate. Each coat was wet sanded virtually down to the fabric . . . which, Mike says, is why it took so long to finish the airplane. Next came the primer coats, more sanding, of course, then 3 coats of black Ditzler polyurethane . . . which also got the 600 paper and water treatment.

Then came the feathers. Eagle builders have the option of several versions of the much admired stylized eagle paint scheme - the kit provides taping instructions - and Mike chose the "Aerobatic Team" pattern. Using a straight edge and grease pencil, he carefully laid out . . . are you ready for this . . . 138 feathers on the tops and bottoms of the wings, 20 on the horizontal tail and 8 more on the fuselage! For an almost obscene number of weeks thereafter Mike bent himself to the task of meticulously taping off each feather, masking off the rest of the wing, fuselage or whatever he was working on, spraying on a coat of silver, then color coats of yellow, orange, magenta and blue lacquer . . . the different colors on succeeding feathers, of course. The blue and magenta were candy apple paints. To make his color scheme particularly distinctive . . . and tricky to do . . . he overlapped his feathers and airbrushed the color of each so that it sort of dissolved into the next. It's beautiful but, Lord! the time that must have taken.

After those fourscore and however many feathers were at last completed and wet sanded to knock off the gloss and tape edge ridges, Mike encased it all, the black and the colored plumage, in two coats of clear Ditzler polyurethane.

Now, I know some of you impatient types are sitting there thinking, "Yeah, yeah - enough with the feathers, how much does it **weigh?**" And you're right, of course - you **can't** build up a showpiece like this bird and expect it to come out as light as a bare

essentials aerobatic special. Mike's Eagle weighs 1,085 pounds empty, but considering what he did to it, it is a tribute to his craftsmanship that it tips the scale at only about 10 pounds more than the typical factory demonstrator (according to Mike) and 35 pounds more than the 1,050 target weight Frank wants his builders to shoot for. Little things like a charging jack for the battery, an oil pressure warning light, etc., are nice, functional items to have on your airplane, but they do add a few ounces here and there.

About ten years ago, Mike moved his business to the periphery of the Torrance, CA airport . . . so that when the time came to take the Eagle to the airport, all he had to do was open the gate at the back of his lot and taxi onto the airport's taxiway.

At the time - in February of this year - Mike had just 3 hours in a Cessna 150, 3 more in an L-19 and a half hour in a Pitts S-2, so, naturally, he chose someone he trusted implicitly to make the test flight - none other than Bob Herendeen.

A machinist's level had been used to rig the biplane, so even a pilot with Bob's touch could detect little to change. The thickness of one 1/16" washer in a lower wing's washout satisfied him that the airplane was as straight and true as it could possibly be.

Bob put 2 hours on the Eagle, then strapped Mike in the back seat and proceeded to give him 6 hours of dual before turning him loose. To say that he liked his masterpiece is perhaps the understatement of the decade. From February until we met him at Watsonville in late May, Mike had spent 75 hours in the rear 'pit - a lot of it in aerobatic instruction with Bob.

One of the reasons Mike chose the Eagle over the Pitts was that he considered it to have more comfortable seating for cross country flying. At Watsonville, his plan was to fly the airplane to Oshkosh in July, and to do some extended high country touring in Montana, Wyoming and Colorado on the way back home to California.

Is he going to draw some crowds at all those airports!



Mike McCluskey



A TALE OF THREE STINSONS

Stinson, one of the great names of civil aviation, came to public prominence in 1912 when Katherine Stinson became the 4th U. S. woman to become a licensed pilot. In 1914 her sister, Marjorie, became the 9th U. S. woman pilot . . . and brothers Eddie and Jack followed them into the air over the next few years. Throughout the 'teens the Stinsons were pioneers in the early efforts to formalize flight training, did exhibition flying all over the world and, in general, made their name a household word . . . at least in those homes with any interest in aviation.

During the 1920s Eddie Stinson operated a charter service out of Detroit and, over the years, accumulated a mental list of improvements he believed airplanes should have in order to make them more acceptable to the general public. Finally, in the fall of 1925 he talked a number of Detroit investors into forming the Stinson Airplane Syndicate for the purpose of building a new airplane incorporating his ideas - things like a fully enclosed cabin, a cabin heater, brakes (and, a little later, a parking brake) and an electric starter. The resulting prototype, the Stinson SB-1 Detroit, a 4-seat cabin biplane, was built in 2 months and 10 days and was test flown by Eddie Stinson on January 25, 1926. The Stinson Aircraft Corporation, with Eddie at the helm, was founded in May to put the SB-1 into production.

In April of 1927 a big 6-place monoplane, the 220 hp Wright J-5-9 powered SM-1, was introduced and instantly became a favorite of would-be Lindbergh emulators and would-be airline pioneers. Exactly a year later, in April of 1928, Stinson introduced the SM-2, a scaled-down, 3 to 4 place version of the SM-1 that was intended for what would later be called the "lightplane" market. The two aircraft, the SM-2 Detroit and the SM-2 Detroit Junior, were expected to be the basis for the company's future product line - a big expensive job for business and a smaller, more economical line for private owners and small businesses. The stock market crash in October of 1929 and the ensuing Great Depression changed all that, however.

With devastating suddenness the bottom dropped out of all of the aviation market and scores of companies went belly up. To stave off what likely would have been the inevitable for them, also, Stinson accepted a buyout offer from the E. L. Cord Corporation for 60% of the company's stock. Inherent in this deal were a number of advantages for Stinson. It provided much needed cash, of course, but it also provided an internal source of engines at the lowest possible cost . . . Lycoming, you see, was already part of the Cord Corporation.

With sales plummeting, the top of the line SM-1 was quickly dropped and the company's remaining resources were concentrated on the smaller SM-2 line. Its horse-

power was increased to improve performance and to make it a true 4-place airplane . . . but inevitably at a higher price. Stinsons had never been cheap airplanes. The SM-1s sold for over twelve grand in late '20s dollars (around \$150,000 in 1984 dollars) and the SM-2 went for around \$10,000 (\$120,000 in 1984 dollars) . . . and in 1930 there simply weren't many people kicking down Stinson's door to thrust that kind of money into their hands. With the Cord connection, however, the company was able to drop a veritable bombshell in the aviation marketplace.

In April of 1930, the Stinson booth at the All American Aircraft Show in Detroit was mobbed - for there sat a new 215 horsepower Junior, the SM-8A, with a price tag of just \$5,575! Knowledgeable observers were thunderstruck . . . a big comfortable 4-placer with fancy upholstery and a 9 cylinder Lycoming R-680 radial for roughly half the price of the earlier but very similar SM-2AB powered with a Wright J5 (220 hp) was a breakthrough virtually beyond comprehension. The nation's economy was still in free fall, but a bargain was a bargain and very quickly, Stinson was selling SM-8As about as fast as it could make them. Before the model run was completed, 235 were sold . . . almost equal to Stinson Aircraft's total production of all models since its inception in 1926. Eddie's little company was for a time the industry leader in the 4-place cabin monoplane class.

Despite its success with the SM-8A, Stinson management knew it would have to run hard just to keep up in the ever worsening aviation marketplace. A new series, the Model Rs, would be evolved from the Junior line, but they did not enjoy the sales success the SM-8A had - nor did the initial models of the follow-on development, the SR, the first of the Reliants. Finally, in 1934 Stinson found the combination again with its SR-5, and, particularly, its SR-5E. Sales of the SR-5s carried Stinson through until the effects of the Depression began to wane and military contracts and a new, smaller line of aircraft could assume the company's major financial burden.

Sadly, Eddie Stinson, the company founder, namesake and president would not live to see these developments. On January 25, 1932, he ran out of fuel while on a spur of the moment twilight demonstration flight off Chicago's lakefront and struck a flagpole while attempting to glide into a nearby golf course. He and his passengers survived the crash and, in fact, Stinson walked into a hospital shortly afterwards, but collapsed a few moments later. He died the following morning, probably from internal bleeding. Eddie had logged over 15,000 hours of flying time and was universally recognized as one of the world's most skilled pilots. His role as company president had been one more involved with sales and promotion than the day-to-day administration of the business,

but his loss was sorely felt - by all of aviation, in fact. A hard drinker and somewhat irresponsible in his early years, Stinson was, nevertheless, a blithe spirit with legions of friends. His funeral was attended by an estimated 2,000 mourners. During the ceremony, a single plane droned overhead, piloted by his friend Jimmy Doolittle.

In the late 30's Stinson underwent still another "downsizing" cycle. The Junior/Reliant line had taken the seemingly inevitable route of ever increasing power and price until, with the 450 horsepower SR-10F, the company again found itself priced out of all but the tiny top end of the civil market - just as they had been with the SM-1 in the late 20s. By this time, the little flat four aircraft engines had become the market rage, so in 1939 Stinson jumped on the bandwagon with its 3-place HW-75. This pudgy little bird would evolve into Stinson's two all-time sales leaders, the wartime L-5 and the post-war 108.

In January of 1949 the Stinson saga came to an abrupt end. During the late 30s and the war years, the Cord Corporation had shuffled Stinson around as a kind of pawn in a number of corporate moves until, eventually, it was the Stinson Division of the giant Convair Corporation. In December of 1948, with big military contracts coming in on one hand and the civilian lightplane market plunging right into the dumper on the other, Convair consigned its existing inventory of 108-3s to Piper - and closed the books forever the following month.

Univair would eventually acquire the Stinson rights and keep parts available right down to the present time, but the corporate entities that carried the famous name had lasted just 24 years. From the SB-1 to the 108-3, Stinson produced a grand total of 13,130 airplanes, according to John Underwood's **The Stinsons**. Of the total 4,202 were L-5s and 5,500 were 108s of one "dash" or the other. The subtotal of 9,702 dwarfs the 3,428 of all the rest of the Stinson models put together . . . which shows just how small the world of aviation was in the 20s and 30s.

By sheer coincidence, two of the more significant Stinson models, the SM-8A and the SR-5E - both of which can lay some legitimate claim to having saved the company during their particular years of introduction - played major roles in this year's Watsonville and Merced, CA fly-ins. A SM-8A was the top antique award winner at Watsonville and a SR-5E won at Merced. And as a wrap-up of the famous line, we encountered at Watsonville one of the very last 108-3s built - one with just over 500 hours total time since new! We were fortunate enough to get to interview the owner/restorers of all three . . . so, sit back and enjoy a tale of three Stinsons.





JERRY THUOTTE'S **SM-8A**

In 1930 an outfit called Portland Airways took delivery of 3 Stinson SM-8As. Based on Swan Island in the stretch of the Columbia River that flows through Portland, OR, the aircraft were the nucleus of what was hoped would grow into a full-fledged airline. Initially, however, they were operated "on demand" - or, in other words, when paying customers were available. The company managed to stay afloat until 1933 when one of the SM-8As was lost in bad weather on a flight from Redding, CA. Financially, this was more than Portland Airways could absorb, so the firm went belly up and the two remaining Stinsons were sold.

The new owner was John Hackbarth of Santa Paula, CA, who ran an aerial mapping service. He took out the plush interiors, mounted camera bays in the cabin floors and proceeded to work the airplanes steadily for the next 30 years. In 1962 one of the SM-8As was destroyed in a fire, so only NC930W, Serial Number 4098 remained. Hackbarth died in the late 60s and his estate was tied up in probate for 7 years. When finally released, the old Stinson, by now in flyable but pretty sad shape, was purchased by Jerry Thuotte of Buckley, WA, a 727 co-pilot for United.

Thuotte flew the airplane for a time but eventually decided it had to be restored. He originally intended to simply do an airworthy restoration - nothing fancy - but as he got into it, each small task became a challenge to his skill and determination to do it the best way he knew how. Pretty soon, the project

was a showplane in the making. Jerry's son Mike, then a teenager, shared an equal workload and it was only natural for a father to want to demonstrate himself and expect of his son the highest standard of which both were capable. You know, the old "if it's worth doing, it's worth doing right" routine.

The restoration was a "down to bare metal" process, typical of what has to be done to any tube and rag airplane. The fuselage was completely stripped, the tubular frame was inspected, repaired where needed, sandblasted and painted. Every piece of wood and sheet metal in the fuselage was replaced with new material. The landing gear was rebuilt and over two weeks were spent building up a set of tall, skinny Fisher kit wheels and brakes. The ol' bird had 8:50 x 10 low pressure tires when it was purchased by the Thuottes, but they wanted it to look as it had when delivered to Portland Airways 50 years before.

The wings were in good shape, needing only a good cleanup and some new leading edge metal to ready them for cover. The entire airframe was covered with Stits fabric and coatings and was painted in the dark green colors and markings of Portland Airways.

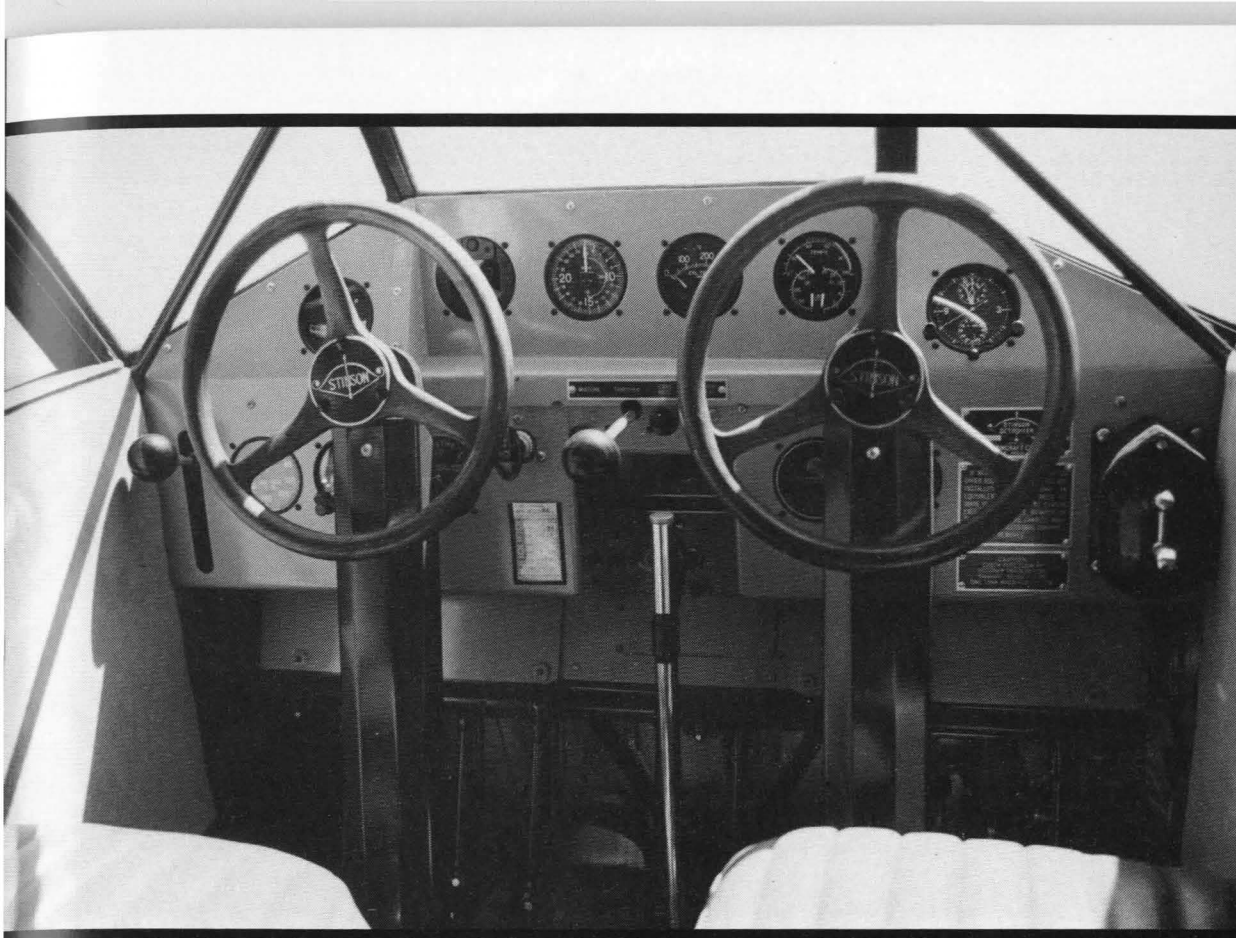
When picked up in Santa Paula, NC 730W was powered by a 300 hp Lycoming instead of its original Lycoming R-680 of 215 hp - very likely for the airplane's high altitude mapping role. The Thuottes got the airplane's original engine, but chose to use a more modern 225 R-680. They had found

one that supposedly had only 4 hours since new when delivered to an A&P school as a demonstration engine. Unfortunately, the many teardowns and rebuilds by the students were not always the best and Jerry and Mike ended up doing a complete overhaul. The cam and front case had to be replaced, but the remainder, including the exhaust collector ring, were useable.

The engine is equipped with a starter, but not a generator . . . which was typical of the early '30s. An old manual guaranteed 80 starts on a fully charged battery - and with about 50 hours on 730W, the Thuottes have not recharged theirs. The airplane had a wind driven generator attached to a landing gear strut when purchased from the Hackbarth estate, but with its blades aimed squarely at the pilot's left knee, it was removed as a safety item.

There also was no radio in the airplane when purchased - and there still isn't one. That would have meant an unacceptable concession to authenticity Jerry and Mike were unwilling to make. When they fly, they also want their navigation chores to be a la 1930.

There was an area, however, where they could enjoy a little luxury. Stinsons were always finely appointed inside - and so is 730W. Its seats are upholstered in rich Scottish leather and mohair that literally exudes the look (and smell) of the early 30s. A great effort was made to make the instrument panel just as authentic, including original type decals and labeling.



Jerry, left, and Mike Thuotte.

The restoration was started 3 years ago and at Watsonville the Stinson had been flying about 9 months. It flew back to Washington a little heavier than when it left home. On Sunday afternoon, it was named the antique Grand Champion for 1984, succeeding Ted Hendrickson's 110 Monocoupe.

As mentioned previously, Jerry Thuotte is

a co-pilot for United. He has been with the company for 18 years. About 12 years ago, he got involved in sport aviation and has built 6 Skybolts over the years. More recently, antiques have become his passion and besides the Stinson, he and Mike have rebuilt a number of Champs and such. They have an Interstate Cadet to do next and are

actively looking for another "big" antique.

Mike Thuotte, who is 20, has been flying with his father as long as he can remember. He soloed at 16 and has been working on his licenses and ratings ever since. Currently, he is rebuilding airplanes for a living but is aiming for a piloting career.





TOM LAURIE'S SR-5E

Fifty years ago this year, the Linseed Oil Paint Company of Philadelphia took delivery of a new corporate airplane - a 3-toned Stinson SR-5E Reliant with the number NC14187 emblazoned across the top of its right wing and the bottom of the left one. Its logs identified it as Serial Number 9279A. For whatever reason, the company didn't keep the Reliant very long, selling it a short time later to Richard Gimbel of the department store chain. He apparently liked the big cabin job quite a bit because he kept it until 1948 . . . took it off to war, in fact. Somehow he managed to take it with him and fly it in Florida during World War II, which raises several questions since private flying was banned along the U. S. coastlines during most of the war. Possibly, it was used in C.A.P. anti-submarine work.

At any rate, 14187 began going through a succession of owners during the late '40s and '50s before making its last flight sometime in 1956. We have to keep in mind that while the antique airplane movement had its formal start in 1953, it took a while to achieve national prominence, so that in 1956 an old airplane was . . . well, just an old airplane. A "junk" airplane, in fact, if it was no longer airworthy. Those that managed to escape the scrap dealers and landfills, exchanged hands at prices that make latter day collectors curse the fates that caused them to be born so late. Considering the advanced stage of the "throw away" society in which we lived during the 50s and 60s, the wonder is that **any** old airplanes remain today. Only the timely founding of AAA and EAA in 1953 and a relative handful of far-sighted early

collectors like Andy Anderson and Shelby Hagberg spared us from the unthinkable - an antiqueless present . . . and a future with a big gap where the pre-1960 airplanes should have been.

Fortunately, in 1956 an antique airplane lover **did** latch on to 14187 and managed . . . rather roughly . . . to trailer it west to LA. The new owner already had an older Stinson SR and had purchased the structurally similar SR-5E for parts. Fortunately for the -5E, the proposed restoration of the SR never came about, so it survived essentially intact . . . to end up in the back of a hangar at FlaBob Airport in Rubidoux, CA . . . with a sheet of black plastic draped over it like a funeral shroud.

It could have been, too, except that one day in 1974 . . . but before we get to that, let's throw our time machine in reverse and go back once more to the 1930s and trace a parallel stream back to '74 - one that will converge with that of the SR-5E some 40 years down life's rocky road.

In 1934 while Stinson's welders were making sparks fly on 14187's fuselage frame, a 20 year old redhead named Tom Laurie was assuming the responsibilities of manhood in his hometown of Ft. Wayne, IN. An aviation enthusiast virtually from his earliest remembrance, Tom had begun making and flying models when he was 12 and had attended the first national model airplane contest, the "Nats", at Dayton, OH in 1931. On the trip he had the opportunity to tour the Waco plant in Troy, OH and was so impressed he would maintain a soft spot for Wacos for the remainder of his life.

In the late 30s, Tom took some flying lessons in a J-3, but did not get his license. He also took a correspondence course in engineering subjects because he and a friend had a goal they were working toward - they wanted to go to California and get jobs in the aircraft industry. In 1940 his friend left without him and landed a job almost immediately with Northrop. Thus encouraged, Tom raked together \$200 and took off for LA in his '37 Ford.

Upon his arrival in the Promised Land, Tom was also ultimately hired by Northrop and he went on to spend many years in its engineering section. He had the unique opportunity to work on almost all the aircraft Northrop designed after 1940, including the fabled flying wings - in the same room with Jack Northrop for much of the time. It was a period of time that was likely the most exciting the world of airplanes will ever see - the transition from the age of propellers to the jet age and, still later, into the space age. Tom considers himself extremely fortunate to have worked for an innovative company like Northrop when he did. He retired in 1970 as manager of mechanical engineering at the firm's Anaheim, CA plant.

Throughout his years at Northrop, Tom continued to build models - scratch designed and built free flight models have always been his game. A number of his designs have been featured in the model magazines, from as far back as the late 30s, and modelers still build 'em today. In fact, Tom's modeling career has sort of come full circle. Of late he has become active in the Society of Antique Modelers (SAM) . . . which, of course, in-

volves his own early designs. He competed at Dayton in 1980, finishing third nationally, and more than coincidentally, made his first pilgrimage to Oshkosh as part of the trip east. He was, you see, doing some advance scouting for a future trip he planned to make.

Sometime, somewhere along the way, Tom and some of his modelling friends began talking about committing themselves to the real thing - building a homebuilt or, perhaps, restoring an antique. The latter appealed to Tom, especially if it involved his old love, a Waco.

Tom had long haunted the LA area sport aviation centers like Santa Paula, FlaBob, etc., and knew where most of the treasures were stored. He knew, for instance, that his friend, Ed Marquart, had a Waco RNF, but try as he might, he couldn't get him to part with it.

Then one day in 1974 he and some modeling friends were visiting FlaBob to photograph a D. H. Fox Moth undergoing a partial rebuild for use in documenting their models. The work was being done in a hangar next to Ed Marquart's, so, naturally, the Squire of FlaBob was over to ensure that everyone was properly treated and entertained. During some casual conversation, Tom happened to notice a large black eminence hulking in the back of the hangar and inquired of Ed what such a whale-sized object could be.

"It's a straight wing Stinson and it's for sale," was Ed's quick reply (he is the unofficial custodian of almost everything aeronautical on FlaBob Airport).

And that was how Tom Laurie and NC14187 first crossed paths.

It wasn't a Waco, but Stinson's were also a well remembered part of Tom's impressionable youth - they were built only 150 or so miles from his home in Ft. Wayne and were a common sight at the airports he visited. Then, it was a straightwing - earlier and rarer than the better known gullwings of the late 30s.

It would be a very desirable Waco substitute as a retirement "real thing" restoration project. Suffice it to say, Tom bought the Stinson, took it completely apart and was soon hard at work making a "new" airplane out of it again. From the beginning and throughout the 10 year project he had a unique band of associates assisting him. Most were fellow modelers, but each had some much needed skill, equipment, etc., that would prove invaluable, indeed crucial to the successful completion of the airplane in several instances. Jack McCracken, for instance, worked at a foundry and simply made new castings when the old ones were missing or beyond repair. Welders, tin benders, dope and fabric experts, woodworkers - all added their expertise to the project. And throughout there was the ever present, ever helpful Ed Marquart, ready to advise or pitch right in on the actual work, whichever was needed at the time.

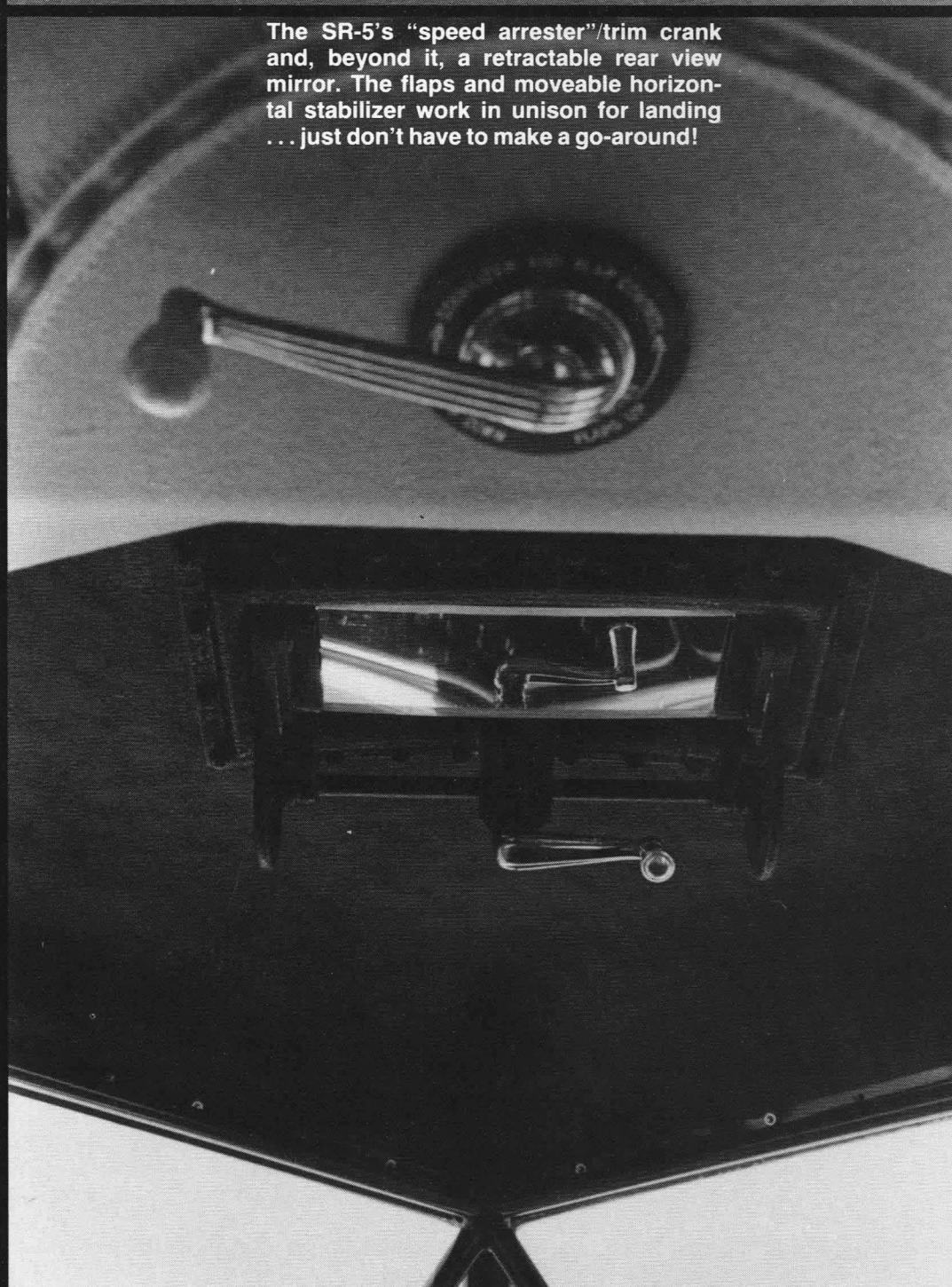
"Ed was absolutely indispensable on this project" is Tom's succinct appraisal of the Squire's role.

Most of the restoration work on the airframe took place at Tom's home - the first 6½ years worth, as a matter of fact, after which it was moved to a shop in Santa Ana for the last 3½ years of mostly covering, upholstering and finish work.

The fuselage was tackled first and, right



Tom Laurie of Newport Beach, CA.



The SR-5's "speed arrester"/trim crank and, beyond it, a retractable rear view mirror. The flaps and moveable horizontal stabilizer work in unison for landing ... just don't have to make a go-around!



away, Tom found he had big problems. Much of the tubing was rusted out and needed repairs and, often, outright replacement. The entire rear end, around the tailwheel attach point, had to be replaced and the complex clusters that tie together the landing gear, wing strut and engine mount structure tested Ed Marquart's welding and finger patch fabrication to their limits. During the process, Tom became quite expert with a hammer and punch as he probed for rusted out tubes.

Fortunately, the tail surfaces were found to be in pretty good shape and it was fervently hoped this good fortune would carry over into the wings. Alas, however, this was not to be. Somewhere in its dim past, the Stinson's flap and aileron hinges had undergone some, shall we say, "unorthodox" repairs and modifications. Non-standard materials (including magnesium that had subsequently corroded into little more than white powder) and methods had been crudely applied in a manner that resulted in not a **single** attachment hole being aligned in the same plane! All had to be rebuilt to factory

specs, of course.

The project's darkest hour, however, came when Tom was removing some fittings from the rear spar of one of the wings. A facing plate came off with one of the fittings to reveal a hidden, thoroughly rotted out section of spar behind it! It had to be replaced, of course, and Tom feared it would be "a hell of a job."

"But, you know, the spar was easy. I talked to Ed Marquart and he told me a few things to do and it wasn't any problem at all," Tom recalls.

The engine was no picnic, however. 8 of the 9 cylinders of the Lyc were difficult to remove - but the last one was "mission impossible." Its piston was solidly rusted to the cylinder wall and steadfastly resisted every conventional means of removal. Not to fear, however, for when all hope seemed exhausted, who, but Squire Ed came galloping to the rescue once more! He rigged up a means of applying hydraulic pressure on the recalcitrant piston and literally pumped it out of the cylinder, about a thousandth of an

inch per stroke. The pistons were junk, of course, and Tom had a heck of a time finding replacements. One day, however, while rummaging through piles of surplus pistons at an establishment on the Chino, CA airport Dame Fortune smiled on him again. An attendant asked what he was looking for and, after hearing Tom's reply, asked, "How would you like a brand new set?" You know his answer of course.

The cylinders, themselves, were sound as far as cracks were concerned, but were heavily pitted inside with rust. They were, nevertheless, saved by **several** applications of chrome plating, with interim boring operations. Almost all the accessory drive gears had to be replaced and, fortunately, Lycoming had earlier put Tom in touch with an outfit called Hackenburg's in Montoursville, PA (just down the Susquehanna River from the Lycoming plant in Williamsport) which still stocks parts for the old radials. In the end, in fact, almost everything in the engine was replaced except the cylinders, case and the crankshaft . . . which had to be ground to remove pitting on the bearing faces.

An exhaust system came with the airplane, but when it returned from the sandblaster it more resembled a sieve! A new one had to be manufactured and perhaps only the fact that if one looks long enough in the LA area, **someone** can be found to do almost **anything** connected with airplanes was the deed finally accomplished. Tube bending, the design and fabrication of tooling for the flared exhaust stack tips and the precise jiggling and welding of the whole mess of parts and pieces were just **some** of the steps along the way. The stack tips, parenthetically, were patterned after one that luckily appeared in the background of a picture of aviatrix Ruth Chatterton that appeared in a 1930s aviation magazine - the **only** clue Tom had been able to find regarding the part's proper shape.

The Lycoming R-680-4 came equipped with a Hamilton Standard ground adjustable prop when Tom bought the airplane and as the restoration neared its end, he sent it out to a prop shop for overhaul. Shortly, the word came back that his hub was junk. Once again the antique detective network was set in motion and, ultimately a replacement was located by a prop shop in Minnesota. By coincidence, a fellow had only recently been in trying to sell the shop the very type of hub Tom needed!

The cabin of a SR-5 is **big** - roughly comparable in dimension to standard size automobiles of 1934. With the Stinson factory located in the Detroit area, it is no surprise that many of the interior appointments and materials were right out of automotive parts bins. The window lift mechanism, for instance, was an off-the-shelf 1929 Model A Ford unit - and Tom was able to get new replacements from an antique car supply house. One item that was a Stinson original was a retractable rear view mirror mounted in the cabin roof just behind the windshield. Tom's foundry expert made new castings for the retraction mechanism from borrowed originals.

In the early stages of the restoration Tom expended a lot of effort trying to find out what the upholstery looked like, only to find no one knew. When he purchased the airplane, NC14187 had plastic upholstery



that obviously dated from the 50s and he assumed it had replaced the original factory material. Later, however, when carefully removing the plastic to get at the cardboard backing material for patterns, he found that the original 1934 interior was still there! The 50s plastic had been used simply to cover the old leather and mohair. It was like opening a time capsule - the type of material, the sewing patterns, the exact placement and shape of inserts, etc., was all there. Tom carefully photographed and otherwise documented everything so that, today, he is the authority on early Stinson Reliant upholstery.

Needless to say, NC14187 was fitted with a new interior correct to the last stitch in even its mohair covered assist straps.

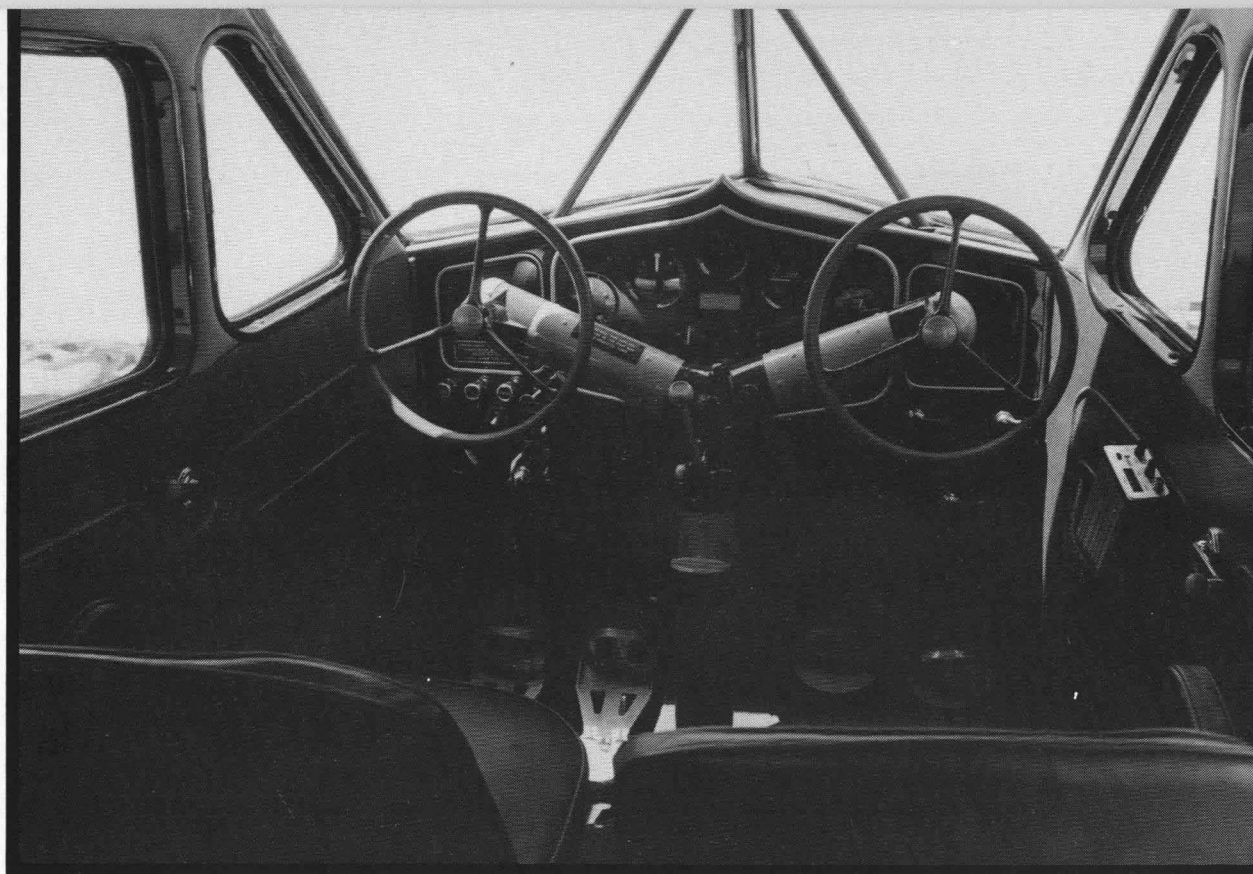
The instrument panel got similar treatment. The old instruments were overhauled and their faces were refurbished, the overlay panels were painted and the appropriate labels and placards were put in their proper places. The "Y" shaped control column came in for its share of work also . . . and **could** have caused a serious in-flight problem at the moment of the initial post-restoration test flight. Tubular in shape, the column contains a rather elaborate array of gears, chains and sprockets that transfer the turning of the dual control wheels into differential aileron movement. Fortunately, after the system was assembled for the first time, someone immediately noticed the ailerons were hooked up backwards - so the gears and chains were rearranged to function correctly long before anyone had the misfortune of discovering the glitch the hard way.

The throttle, oddly enough, is mounted on the control column and thus must move fore and aft with it. It **looks** awkward, but apparently poses no problems in actual use. The rudder pedals, which contain foot straps to facilitate use of the rocker-type heel brakes, **were** a problem, however. The foot shaped pedals and their size 8 straps had to be enlarged to fit Tom's more generous foot size.

The airframe was covered and finished with the materials and methods developed and manufactured just a few hundred yards down the street (taxiway?) from what has become our point of reference in this article - Ed Marquart's airplane emporium. Ray Stits' factory is the source of "the system" that currently is used to cover most of the homebuilts, classics and antiques we see at fly-ins these days . . . and Tom's Stinson is just one more fine advertisement. The basic color is rich cream and the trim, a typical Stinson scheme, is a bright orange that is penstriped with a contrasting but compatible brown tone. It's beautiful . . . and colorful in a tasteful way that seems to completely elude the paint scheme designers at Wichita and elsewhere in the airplane world of today.

The last bits and pieces that went on the airplane, the cowling, fairings, wheel pants, etc., were a tin bender's nightmare, but, fortunately, Tom's cadre of experts included Chris Schultz, a master metalsmith, so every piece came out looking like new. The wheel pants and cowling were special challenges - with patches on top of patches and over 300 additional rivets in the cowling alone.

When he bought the Stinson, Tom got no logs or airworthiness certificate for it, so had a potential bureaucratic battle with the FAA



looming ahead before the airplane could fly. His darkest fears were quickly allayed one morning, however, when on the spur of the moment, he ducked into the FAA office at Riverside . . . and walked out a short time later with all his paperwork! A helpful lady, a phone call to Oklahoma City to confirm ownership and a supervisor who knew the "book" on procedures quickly cut through what often is a red tape jungle in similar cases. Let's hear a boisterous round of sincere applause for the Riverside office of FAA!

Now, all Tom needed was a pilot. Remember, he never completed his own flight training in the late 30s. Again, Ed Marquart proved resourceful by recommending Bill Turner, a former Navy pilot, erstwhile Gee Bee ace (it's in the National Air and Space Museum now) and current Brown "Miss Los Angeles" jockey. Bill was eager (boy, is he eager!) and after learning that he had some 60 hours of fairly recent Stinson SM-8A time on the EAA Lindbergh Commemorative Tour, Tom was willing - so, on the appointed Saturday late this spring the airplane was

rolled out and taxi tested. Winds gusting to 30 knots put off the first flight until the next weekend, however, when Bill simply taxied to the end of FlaBob's narrow runway, cobbled the Lycoming and flew. He checked the new old bird out thoroughly and brought it back in for a flawless landing.

"Don't change a thing!" were his first words to Tom.

There were a few mechanical glitches that sprang up in subsequent test flights, however, such as one side of the dual mag acting up, so that the Stinson was not ready to make its intended debut at Watsonville '84. It did make Merced the following weekend . . . and came away the winner of the Mayor's Trophy, the fly-in's top award.

If everything went according to plan, the Stinson will have been flown to Oshkosh '84 by the time you are reading this . . . and a scratch built free flight scale model of it may have been started. After years of the "real thing", Tom says he wants to relax and get back to his modeling.





FRANK BAILEY'S 108-3

Frank Bailey

On December 1 of 1948 Stinson NC4143C, Serial Number 108-5143 was one of the approximately 500 unsold 108-3s parked at the famed Willow Run Airport near Detroit. The bottom had dropped out of the post-war lightplane market and Convair, Stinson's manufacturer, had just taken the first step towards getting out of the little airplane business - it had signed a deal with Piper Aircraft to sell its remaining stock of Stinsons and, pursuant to further negotiations, assume the manufacturing rights for the design.

In succeeding months, 4143C was flown to a Piper dealer in Colorado who, in turn, had it flown to another dealer in Los Angeles who sold it to Robert Smith of Smith Ford in Garden Grove, CA. Mr. Smith owned his own hangar on the Orange County Airport (now John Wayne) in Santa Ana and kept the Stinson out of the weather and cared for the next 29 years. He quit flying around 1960 . . . after putting just 391 hours on the airplane! For whatever reason, however, he kept the airplane until he sold his hangar to a consortium of doctors in 1978. Only after getting the keys to their new property did they learn that they had also bought a classic airplane!

(Getting what may be the world's lowest time Stinson Station Wagon thrown in the deal for free is likely an indication of the outrageous price the good doctors had to pay for the hangar. That's still gold in them California hills, you know - but today we're talking about real estate!)

None of the new owners were interested in a 30 year old tube and rag airplane . . . so they put it up for sale - and it was promptly snapped up by a TWA A&P named Frank Bailey from nearby Carson, CA.

Frank trailered the partially disassembled ol' bird home and spent the next 2½ years recovering it and insuring that it would come out of his shop exactly as it had from Stinson's Wayne, MI factory three decades before. He had flown a new Stinson in the late 40s and had vowed at the time that someday he would own what seemed to him then was the ultimate in aeronautical opulence. Over the years, he had kept his eyes open for a good one, but never encountered anything that met his high standards. When he examined the logs of 4143C, however, he knew his dream had at last been realized. This was virtually a new airplane!

Before he removed the original fabric, Frank photographed the airplane from every angle, made copious notes, measurements and drawings so that he could put everything back as it was. Then when he cut away the fabric, every piece of it was saved for further reference - things like the exact grommet spacing, etc. Only after, say, a wing was completely finished was the old fabric finally discarded.

As delivered from the factory, the Stinson was a chocolate brown with cream trim, the stock factory paint colors for the 108-3. Oddly enough, however, the brown was called "Boston Maroon" (and the trim "Tucson Cream"). Frank was able to get the col-

ors in dope and enamel so there was no problem in duplicating the original appearance.

The inside of the airplane - both the structure and the cabin - was a piece of cake. The wings were like new inside, the fuselage looked the same after a clean-up and the cabin interior needed nothing more than a good vacuuming and a little clean-up and waxing of the "woodie" sidepanels in the rear seat area. A modern radio was put in the panel and some sheepskin covers were fitted to the front seats, but, otherwise, what is in the cabin today was put there by Stinson upholsterers in 1948.

The smooth running ol' six cylinder Franklin 6A4-165-B3 with, remember, only 391 hours of running time when Frank bought the airplane, was borescoped and found to be like new inside. The carb and mags were overhauled, largely in deference to the age of their seals and gaskets, but that was it. The 165 horses roared to life on the third blade and have been running faultlessly for the 117 hours Frank has put on the airplane in the last three years.

Frank Bailey is a native New Yorker who grew up in New Jersey and moved to California following Navy service in World War II. He got his pilot's license immediately after getting out of the Navy, using his own funds. After getting to the West Coast, the G. I. Bill was created by the government, so he used it to get his A&E ticket (as it was known then) and had enough benefits left over to work on his Commercial license. He took the training

but never took the check ride.

After his schooling, Frank went to work for Douglas at the El Segundo plant and remained there until it was closed in 1960. At that time he simply went across the street and went to work for TWA - and has been with them now for 24 years. He has always worked a night shift because during much of the day he operates his own business, a custom gunsmith shop.

Frank's flying has always been a recreational pursuit. If he wants or needs to get somewhere, he can use his airplane pass. But when he wants to fly for the sheer enjoyment of it, he rolls out the Stinson, fires up the Franklin and goes cruisin'. Most of his hours in it have been hops around the LA area (he bases at the Compton, CA airport) and to fly-ins like Watsonville - where I had the pleasure of meeting him this spring.

The Stinson 108s were marketed as business airplanes when they were new, and as "family" airplanes for those who could afford one. About 5500 were produced from 1946 to 1948, which is pretty amazing when you consider the competition - the new Cessna 170, the Bellanca Cruisair, Taylorcraft's Foursome, Republic's Seabee, the Navion and Beechcraft's spectacular new Bonanza. Not one of them, however, even came close to the 108 Series' production figures . . . in fact, it took Beech over a decade and nearly a dozen model changes before it equaled the 5500 Stinson 108s produced in the three years of 1946, 1947 and 1948.

Why was it the world's most popular 4-place airplane during its production life? It was easy to fly; it had excellent short field performance, which suited it to most of the nation's airports of the late '40s; pricewise, it was one of the best bargains around; it would haul about anything one could close the doors on - which was quite a feat in the Station Wagon versions - and, well, it was just considered to be a good, honest ol' airplane. It still is, in fact. Amazingly, almost half of the 108s of all series (108, 108-1, 108-2 and 108-3) are registered with FAA today - 2230 of 'em at last count.

Frank Bailey loves his and, obviously, so do a lot of other folks. 🍷





THE HELIOPLANE

How would you like to own a little 2-place, side-by-side sportplane that would:

- Take-off into a 10 mph wind in less than 50 feet . . . fully loaded . . .

- Climb out at an 18 degree angle, clearing a five story building in less than 300 feet straight ahead, or spiral up out of an imaginary cylinder just a few hundred feet in diameter . . .

- Climb at a forward speed as low as 27 mph, under full control and without fear of stalling or spinning . . .

- Cruise at anywhere between 27 and 108 mph - so quietly that your engine and prop noise would approximate that of a passing automobile . . .

- And in case of an emergency of some sort, descend under full control at a forward speed of 27 mph and a vertical rate about that of a parachute . . .

- Land, into that 10 mph wind, with a ground speed of 17 mph and stop in 16 yards . . .

- All on just 85 horsepower and perhaps 5 to 5½ gallons per hour at 75%?

Well, sorry for having whetted your appetite for nought, troops, but sad to say, you can't have one. Such an airplane **does** exist, however, has, in fact, for the past 35 years, but so far, no one in a position to bring it to the market place can be convinced you really want one. You want to go fast, they believe, not slow.

We're talking about the Helioplane, of course, a one-off R&D airplane built in Norwood, MA in 1949 to the order of its designer, Otto Koppen of the aeronautical engineering faculty at M.I.T., and the man who perceived a need for such a capability, Dr. Lynn Bollinger of Harvard Business School. The few

people who remember the Helioplane at all today think of it simply as the test bed for the ideas later incorporated in the Helio Courier. Indeed, that **is** its niche in aviation history, but for a brief period back in '49, there was a flickering chance the Helioplane would go into production . . . and change the face of private flying, its creators hoped.

The airplane, with its unique combination of ideas and inventions, most of which were already old in 1949, came together in the brain of the brilliant Otto Koppen, but it took the crystall ball of Lynn Bollinger to create a justification for it . . . a justification compelling enough to get the airplane built and in the air.

Bollinger was an interesting person. A former airline pilot, instructor, fixed-base operator and management consultant, he had worked his way through the academic world to his Ph. D and ultimately landed a spot on the faculty of the now legendary Harvard Business School - an institution that, for better or worse, has probably had a greater influence on the way the world has done business for the past half century than all the governments and political leaders put together.

Bollinger knew aviation and he knew the marketplace better than most. As World War II ground to a fateful climax, the lightplane industry was already anticipating a glorious era. Predictions for a post war market as large as 300,000 airplanes were being made by responsible people. All those military trained pilots would be coming home, they maintained, and naturally they would want to buy their own planes and continue flying. The fact that the same predictions had been made after World War I and failed to materialize deterred no one, it seemed . . .

no one except a few knowledgeable persons like Dr. Lynn Bollinger. In 1945 he was commissioned to do a market study by one of the lightplane manufacturers and in it he boldly (considering what everyone else was saying) predicted that "only" about 38,000 airplanes might be built and sold in the first post war year, after which the market would taper off sharply. He hit it virtually on the nose - 35,000 airplanes were produced in 1946, half that in 1947 and half '47s total were sold in 1948!

Needless to say, with that kind of demonstrated aeronautical clairvoyance, people began to listen when Bollinger had something to say . . . and they got an earful. Private flying, he pointed out, had never lived up to expectations and until the underlying reasons for this failure were addressed and somehow turned around, little change could be expected.

First and foremost, he said, was the lack of utility of the lightplane, itself. You could only use it to fly from one inaccessible place to another inaccessible place - airports, typically located out in the boonies. And, parenthetically, the reason airports were located where they were was because lightplanes were such noisy beasts no one wanted to live near them.

The second reason was that the general public perceived the lightplane as basically unsafe. Speed, Bollinger recognized, was looked at from two entirely different viewpoints by pilots and the non-flying public: pilots worshipped speed, while the public thought of it largely in terms of how hard one's soft, pink bod would impact Planet Earth in case of an accident.

The third reason was cost - how many

people could afford an airplane when it cost as much as their house?

In 1948, Bollinger and another Harvard professor, Arthur H. Tully, Jr. published a book entitled "Personal Aircraft Business at Airports" which expanded on these problems. From it evolved Bollinger's solution: design an airplane that could safely operate in and out of such a small space that airports . . . tiny airports . . . could be built right in the downtown and residential areas where people really wanted to go; an airplane so quiet that no one would object to its presence; an airplane capable of landing so slowly that one could reasonably expect to walk away from a forced landing, even into some types of obstructions. Such an airplane, he believed, would be so well accepted that it would be built in sufficient volume to allow much lower unit costs.

Thus was born the rationale for the Helioplane.

So convinced was Bollinger that his cause was just that he began seriously thinking about getting such an aircraft designed and put in the air. He investigated a number of concepts and designs before finally deciding that Professor Koppen had the most promising and, significantly, the most **achievable** ideas.

Otto Koppen was no late comer to the field of lightplane design or to the quest for an "everyman's" airplane. He was, in fact, a pioneer in both, having previously designed, among other things, Henry Ford's 1925 Flivver Plane and just before World War II, the 2-control, spinproof General Skyfarer.

Initially, Bollinger and Koppen sought developmental funds from the federal government and, later, industry, but kept getting doors closed in their faces. The CAA and NACA had no appropriations for lightplane development and industry . . . well, industry was only interested in the top end of the performance scale. In exasperation, the two professors finally decided to fund the construction of a prototype out of their own pockets.

The building of the Helioplane is a familiar tale for us latter day sportsman pilots. Farmed out to a greater Boston area FBO, E. W. Wiggins Airways, the operation had many of the earmarks of a homebuilt project. Wiggins employees, including president Joseph Garside, were soon swept up in the enthusiasm everyone connected with the Helioplane ultimately seemed to contract, and many began volunteering their free time on evenings and weekends. Parts and materials were provided at cost and, generally, whatever the needs that arose, they were quickly met. Construction began late in 1948 and after a total investment of \$6,000 the first flight took place on April 8, 1949. The test pilot was John W. Phillips.

The one and only Helioplane, N9390H, began life as a Piper Vagabond airframe, which comes as a surprise to most because they see no similarity in outward appearance between the two. And, indeed, other than the cabin section, little of the Vagabond fuselage was retained. It was lengthened 45 inches to 22 ft. 5 in. and was fitted with a completely new vertical tail that, initially, incorporated a split or two-piece rudder. The lower half was interconnected with the ailerons in an effort to combat adverse yaw and the upper half was actuated by the rudder pedals in the conventional manner.

Up front, the Vagabond landing gear Vs were replaced by tall, long throw oleopneumatic struts fitted with the then new Goodyear crosswind gear.

The Vagabond's Continental A-65 was replaced by a fuel injected C-85 fitted with a V-belt reduction unit . . . much like what you see on ultralights today, only beefier . . . driving one of the darndest propellers ever hung on a lightplane. Otto Koppen drew up specs and had the Koppers Company of Baltimore make up a special version of their Aeromatic propeller . . . 9 feet long!

The engine exhaust was piped into a device fitted on the bottom of the cowl that Koppen called his "hush box" - an ejector-type muffler he had developed (and patented) for his pre-war Skyfarer.

The Vagabond's stubby little 29 ft. 3 in. wing was shortened even further to 28 ft. 6 in. - but that was just the beginning. The leading edges of the wings were fitted with Handley Page automatic slats and the trailing edges with slotted flaps. The ailerons were rigged to droop with the flaps to provide what were, in effect, full span flaps, although differential aileron movement was always possible even in the full drooped position.

It should be noted that taken singularly, none of these modifications was new in 1949. Handley Page, for instance, invented his slotted wing in 1919 after years of experimentation that began near London in 1908 . . . but Otto Koppen was the first to put all the elements he incorporated in the Helioplane into one airframe.

If you are not into all this aerodynamic esoterica, suffice it to say that a wing with leading edge slats (or movable slots, if you prefer) and slotted flaps produces an increase in lift of over 100% when the devices are deployed - and a 30% reduction in the stall speed.

Further, the huge geared down prop produced about twice the thrust normally expected of an 85 hp engine and conventional prop. Together, these features produced the phenomenally short take-offs and landings that made the Helioplane stand apart from contemporary lightplanes . . . and, incidentally, was the basis for the name "Helioplane". Bollinger and Koppen felt their airplane possessed as much as 90% of the everyday utility of the still rather primitive helicopters of the late 50s, so "helioplane" was intended to imply "helicopter-like airplane."

It is interesting to compare the Helioplane with a stock Piper PA-17 Vagabond to determine what sort of compromises had to be made to achieve the Helioplane's performance. Or, in other words, whether it was good enough that critics could not counter by saying, "I can do 90% of what this thing will do with a stock Vagabond - at a lot less expense and mechanical complexity." The stock PA-17 weighed 650 pounds empty, compared to the Helioplane's 745, which included all the aforementioned modifications, plus starter, generator battery, radio, an extra door and shoulder harnesses for each seat. Since the "full electric" C-85 accounted for a good portion of the 95 pound increase, it's rather amazing that Koppen could add so much and experience so small a weight penalty. Gross weight of the PA-17 was 1150 pounds and the Helioplane's was 1250, leaving each about the same 500 pound useful load. According to Piper, the

Vagabond would cruise at 92 mph on 80% of its 65 horsepower while the Helioplane was said to do 108 on 75% of its 85 horsepower. The Vagabond stalled at 48 mph while the Helioplane would fly under full control at as low as 27. In a no wind condition, the Vagabond needed 1570 ft. to take-off and clear a 50 ft. obstacle, whereas the Helioplane would do it in less than 300 ft. The 50 ft. barrier landing took 1280 ft. in the Piper, just a few hundred feet in the Helioplane. It could descend at an angle of 14 degrees. Its stall angle, incidentally, was 29 degrees.

Obviously, the Helioplane was an order of magnitude better than the stock Vagabond in the low speed regime, which was Professor Koppen's means of ensuring crash survivability. The force of impact increases as the square of speed so, for example, the thud against an immovable object is four times as great at 60 mph as it is at 30. According to Koppen's research, the Helioplane's (or Vagabond's) **normal cabin structure** was sufficiently shock absorbent to all but eliminate the risk of serious injury to properly strapped in pilots **at under 40 mph**. Being able to "parachute" in at under 30 mph gave the Helioplane legitimate claim to having been one of the most crashworthy airplanes ever built.

Equally important was the aircraft's stall/spin resistance. With a wing that hung on up to 29 degrees angle of attack and with the virtue of almost full maneuvering capability up to that point, there was every reason to expect that the Helioplane would effectively brush aside the number one killer of light plane pilots and passengers. Unfortunately, that was never to be proven in actual practice, because the airplane never went into production.

The initial plan was to produce the Helioplane for private owners, but with the 2-place market already saturated with Cubs, Champs, Luscombes, etc., a late '40s survey indicated a 4-place version would be the way to go. That ultimately resulted in the Helio Courier . . . and a turn down a completely different marketing path. The original goal, a revolution in lightplane flying by transforming the machine, itself, into a more useful, safer, less expensive and more socially acceptable means of conveyance, went by the boards in favor of a large, very expensive special purpose aircraft, most of which have been used over the years by the CIA and missionaries.

N9390H finished out its active career as a pure R&D work horse. The split rudder experiment was abandoned and the top and bottom portions were reconnected, the ailerons were reconfigured into short, wide chord surfaces that worked in conjunction with spoilers. Small stick displacement moved just the ailerons; greater movement brought out the spoilers. This system proved more effective at very low airspeeds and is what you see on Helio Couriers today. Making the ailerons shorter in length allowed the slotted flaps to be increased in span.

After a couple of years of test flying, the Helioplane was retired and, in response to a request by Paul Garber, was donated to what is now the National Air and Space Museum in Washington. The airplane had less than 100 hours of flying time in its log books and had made just one long cross country flight, a trip from Boston to Chicago

and return. So far as I know, the NASM never displayed the Heliplane and in the mid-70s, it was placed on temporary loan to the EAA Museum in Hales Corners (Milwaukee), Wisconsin. It was returned to Washington in 1979.

The period of time the airplane was at EAA gave me the opportunity to meet Otto Koppen. One summer day in 1976 he buzzed to Milwaukee in his bright yellow American Yankee (with a full IFR panel, which he used regularly) and spent several hours looking over his Heliplane and discussing it with the EAA staff. He expressed regret that the 2-placer never went into production and told us that pilots invariably expressed more interest in it than the subsequent Helio Courier because they saw the Heliplane as something affordable and appropriate to their needs and desires as airplane owners.

My question for Professor Koppen was one I had wondered about from the moment the airplane was unloaded at Hales Corners. On the ground in a level attitude, the Heliplane with its 9 foot Aeromatic had a **minus** 1½ inch prop clearance! Was it really possible, I asked, to operate this airplane throughout its incredible flight envelope without eventually sticking a prop tip in the ground? All those ultra slow landings would not be grease jobs, I pointed out.

Professor Koppen smiled and told me that the huge prop was really the "secret weapon" of the Heliplane. It's spectacular take-off performance was really in excess of what normally would have been expected with a slatted/flapped wing only. The extra "umph" came from the 108 inch Aeromatic. Such a high percentage of the total wing span was immediately behind the prop disc that, with the flaps down, the airplane was literally "blown" off the ground on take-off. This also provided security for the prop. Professor Koppen said that a CAA test pilot sent to evaluate the airplane had much the same reservations about prop clearance that I did and took it as a personal challenge to **somehow** get a blade into the runway. He spent a couple of days trying everything he could think of (short of flying it right into the ground, of course) but never succeeded. Why? Well, as Koppen explained it, the prop produced so much thrust that as the throttle was advanced, the airplane instantly began riding up on the landing gear oleos, so that by the time the airplane could be nosed down level, the gear was at full extension . . . and the prop well out of danger of striking the ground. There was no way to beat the phenomenon - you simply **couldn't** get the prop in the ground.

The Heliplane worked - it did what Otto Koppen designed it to do - but would it have revolutionized private flying as Lynn Bolinger hoped had it been produced? We'll never know, of course . . . but it's interesting to speculate. **Perhaps** quiet Heliplanes and what later would be termed STOL air strips would have been tolerated in the suburbs of 1949. **Perhaps** city governments would have allowed them in the downtown areas - may, in fact, have even financed the airstrips "for the public good." And **perhaps** enough pilots would have been willing to trade off end speed for utility and crashworthiness to have made the Heliplane a success in the marketplace.

But, again, perhaps not.

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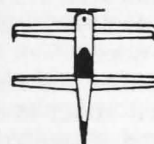
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In retrospect, the late '40s may have already been too late in the game for the Heliplane because:

- Hundreds of big paved airports had been built during World War II and were now being turned over to local governments for public use. Airports were suddenly far more accessible than they had been before Pearl Harbor . . . and well suited for what turned out to be the true wave of the future, the radical new Bonanza that Beechcraft had just introduced.

- With the unprecedented post-War building boom in full swing, downtown and close-in suburban land values were soaring, perhaps too high for even tiny STOL strips.

- Having just lived through the decade of the P-38, the Mustang, the P-80 Shooting Star and, now the F-86, realistically, how could you interest pilots in anything other than speed, speed and more speed?

If the Heliplane had come along in the late 30s instead of the late 40s, and if there hadn't been a war . . . perhaps.

Whatever, it will be my everlasting regret that a few weren't built so that one or two

might have survived long enough for me to have had the opportunity to fly one. Wouldn't that have been a blast - slow flying at less than 30 . . . landing and taking off on a tennis court sized "airport"! It may or may not have revolutionized aviation, but the Heliplane would have been a terrific sport plane . . . which brings up a point. Today, if you want to do anything different in aviation, you have to do it in the very special world of homebuilding. Composites and canards, for instance, had to come of age through homebuilding before the ultra cautious manufacturers finally decided to take the plunge. Unfortunately, the Heliplane didn't have homebuilding to fall back on as a means of gaining widespread acceptance. EAA wouldn't be founded for another 4 years on the day the little bird made its initial test flight. But what th' heck, it's NEVER too late for a design or idea in the world of sport flying. All an airplane has to do there is please its builder - age, complexity, performance, all are secondary. I think a homebuilt Heliplane would have considerable appeal today - I know I'd certainly like to have one. ▼

Sportsman Pilot

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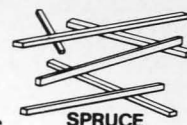
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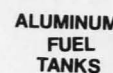
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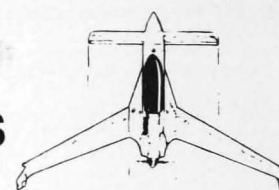


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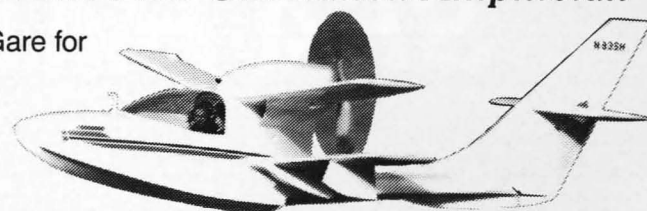
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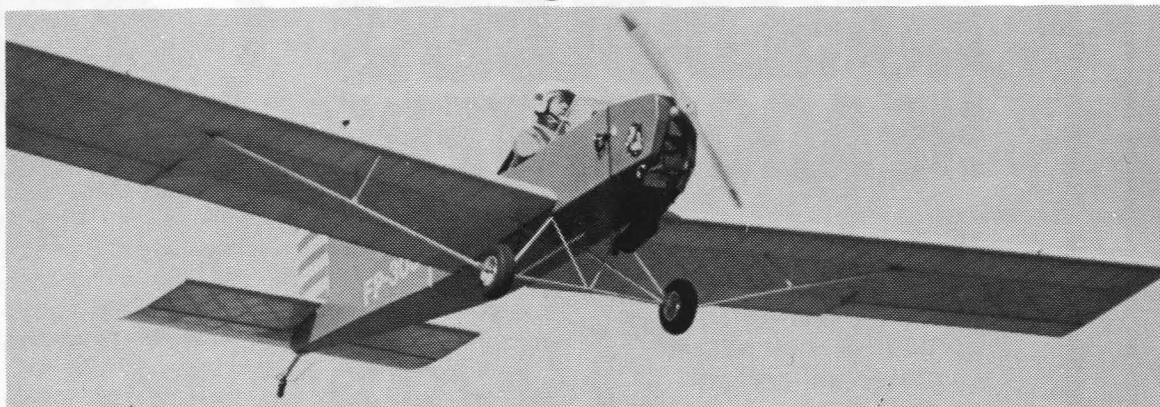
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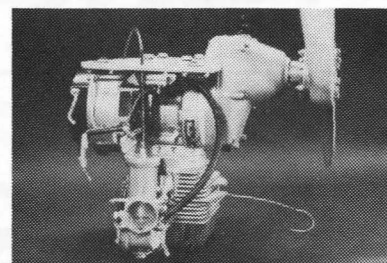


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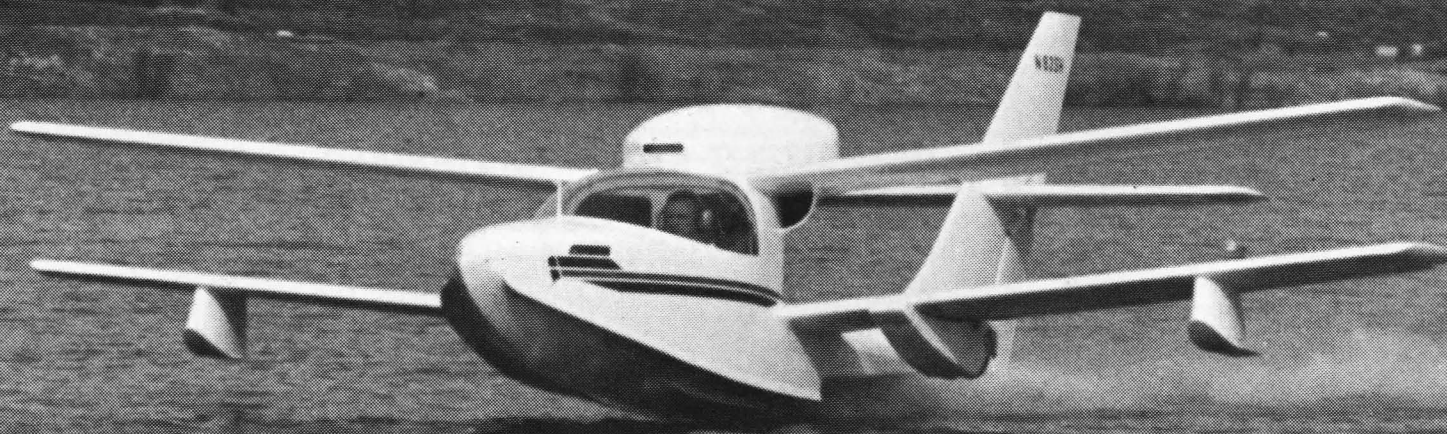
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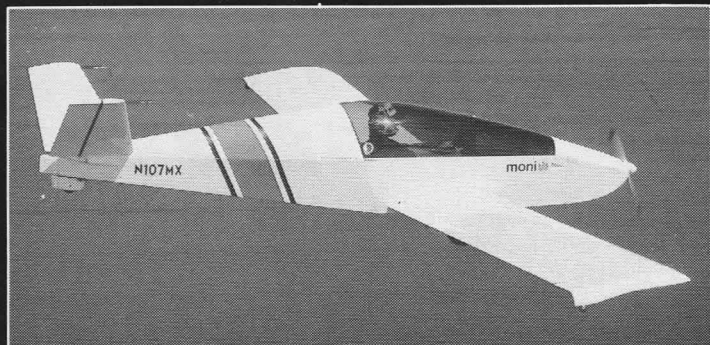


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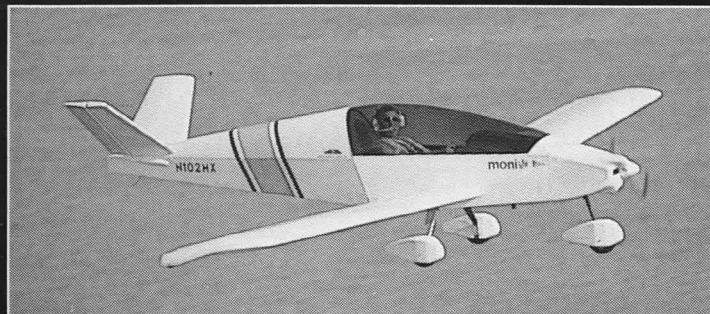
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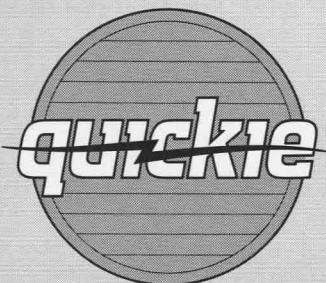
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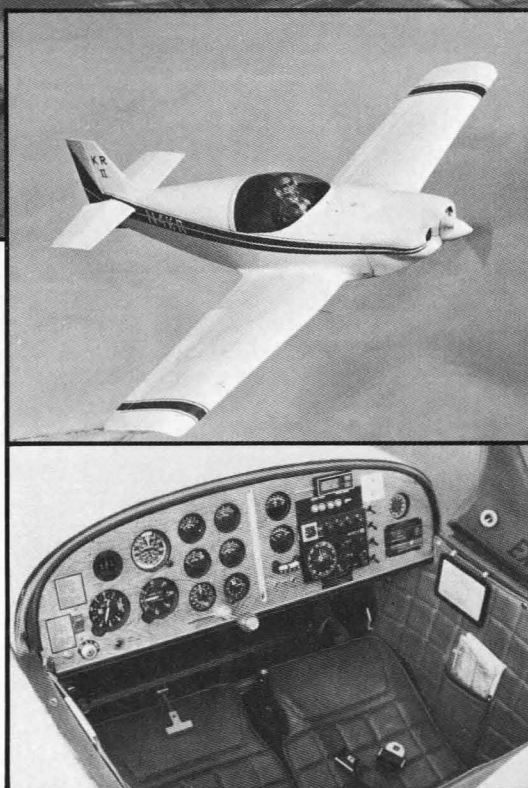
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